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(Kilkerran House)

PREFACE

This work was undertaken at the suggestion of Professor Stuart Piggott, who kindly offered the writer a place in the Department of Prehistoric Archaeology, University of Edinburgh, in October 1957.

The actual study has of necessity been based to a great extent on the typology of bronze and gold objects; the continuing lack of knowledge of burials, settlements and common pottery in the first millenium B.C. remains an unsolved problem. However, the distinction of a type of pottery, termed Covesea Ware, has provided the first information that may enable us to discuss a truly Late Bronze Age culture, rather than mere industries, and the appearance of gold armlets in varying circumstances, fully documented in Appendix ii, provides a hint of a solution to the funerary problem. The list of settlement sites, Traprain and Jarlshof, remains small, although several hut-circles have yielded evidence of Late Bronze Age use, and this also opens up a new line of pursuit.

The Late Bronze Age in Scotland has been studied on previous occasions, notably by Childe in 1935 and 1946, but he placed the emphasis on the more unusual aspects of the period, such as the settlement at Jarlshof. Collections of material were carried out

by Callander in 1923 and by Henderson in 1938. In 1931 Miss Benton provided the first hint that the Scottish Late Bronze Age was not merely a crude reflection of English and Irish technology and typology, but unfortunately the effect of her thesis was the further confusion of the issue, because of the lack of discrimination in pottery definitions. Nevertheless, the suggestions advanced in 1931 have been substantiated, in a somewhat different form, in the present work.

The method of study employed here included a careful re-examination of most of the bronze and gold objects, and this has not been without its rewards of new information. In practically all cases, and wherever possible, former published work and reports were followed up and checked, and the results, especially with regard to shields, sometimes necessitated an entirely new approach.

The typological studies are based upon the English and Irish material, and published work and personal inspection of objects from these areas form the main field of comparative typology; however, as will be seen, the chronological systems employed in England and Ireland have not been used or adapted, because of the unique position of Scotland in the Late Bronze Age, the recipient of influences from all quarters.

The writer has tried to steer clear of most temptations to interpret typology into sociology, with the exception of a short digression into the field of ethnology. The recent attempts to postulate social organizations from the composition of bronze hoards have not, in my opinion, been convincing, and these are not considered here.

I am happy to acknowledge the assistance and inspiration given me by Professor Piggott; others who have been particularly helpful include Mr.R.B.K. Stevenson and Miss A.Henshall of the National Museum of Antiquities, Mr.R.G.Livens of the Hunterian, Mr.J.G.Scott of the Kelvingrove, Mr.J.Brailsford of the British Museum, Mr.D.Britton of Oxford, Dr.G.Bushnell of Cambridge, Mr.J.D.Cowen, Mrs.M.E.C. Stewart, Mr.M.Murray, Dr.J.Raftery and Mr.E.Rynne of the National Museum, Dublin, Mr.L.Flanagan of Belfast Museum, and the curators of many other museums in Scotland and England. Mr.S.E.Durno of the Macaulay Institute for Soil Research has been untiring in providing material for the attempt at a 'Personality of Scotland', parts of which it is hoped may prove of value to students of other periods in Scotland's prehistory.

INTRODUCTION : THE PERSONALITY OF SCOTLAND

Scotland contains a range of habitats, most of which restrict and control fauna and flora to such an extent that the activities of man are severely curtailed. In certain regions, these habitats near the maximum limit for the survival of most forms of organic life, and in many other areas the conditions are of such severity that man has always attempted to avoid them.

It is proposed here to illustrate how the concept of Highland and Lowland zonation can be applied in a more local sense to Scotland alone. Geological and geographical considerations demonstrate the essential divergencies between the main upland areas and the primarily coastal lowlands, and the evidence of Late Bronze Age Scotland will show how this zonation affected the distribution of occupation. In general terms, the idea as expressed by Fox (1952, 40) suggested that in the Highland Zone new cultures tended to be absorbed by the older existing culture then in possession of the land, and that a fusion of ideas occurred. Thus a continuity of cultural ideas should be perceptible through long periods of time, but for the same reasons the development of individual trends should also appear, especially in more remote and inaccessible regions. Whether these individualistic tendencies were the result of local ideas or of limited trading routes passing through the areas in question may be determined by the consideration of the various aspects of the culture.

The evidence from the Lowland Zone of Britain suggests that early man preferred, because he could best handle, forest on pervious soils such as chalk, limestone, sands and gravels, and the oak forests

with their dense undergrowth were shunned because of their unsuitable soil, which was damp and difficult to drain. In the Highland Zone, chalk and limestone areas are not as common, and so early man was forced to accept the less favourable soils, and his avoidance of clay land is not so well evidenced.

The sandy and gravelly land occurring along the coasts, and on some raised beaches, were probably the first areas to be occupied; however, these coastal regions are to a certain extent limited by the encroachment of the Scottish mountains down to the sea, and possibly were too limited to allow the concentration of settlement which may lead to independent development. Several regions in Scotland are, however, of sufficient range to permit extensive and continuous settlement, such as the Lothian Plain and the Laich of Moray, and it may be that in these areas the opportunity existed for the independent evolution of cultural traits. The concentration of finds in various regions, to be detailed below, shows the development of several groups, inter-related to be sure, but nevertheless showing some measure of cultural entity. Further areas where settlement was preferred are those near the high-water mark of tidal estuaries, as in the Tay, where fording will be most convenient, and where coastal traders will find acceptable landing places.

In lowland areas or other areas of wet soil, small patches of well-drained land will usually be present, and early man would undoubtedly have sufficient knowledge to exploit these in some way; the difficulty in this regard is that most find-spots are insufficiently precise to enable these to be distinguished. Again, most sites in mountain areas are found on the lower plateaux and foothills, while finds if higher

are probably near cols which were employed for the crossing of the mountain range. Intermittent occupation can sometimes be ascertained at higher levels, possibly due to the habit of moving flocks and herds to greater heights in summer. It is also possible that such high-altitude finds and sites represent the influence of what we may call pressure groups, the new arrivals who force the older inhabitants to seek land away from the better areas, or alternatively and less commonly, the new arrivals, refugees, who themselves are forced to move on to the less-favoured land by the indisposition of the older peoples to move. (Elgee, 1930, 88-89, "Necessity only could have compelled the urn people to face and to endure the sterility ahd the climatic conditions of Blackamore".) Other explanations of high-level finds may be the use of high ground for more forest-free travel, the concealment of loot, the attraction of mountain game, and the fact that in the Late Bronze Age, the somewhat drier climate of the Sub-boreal period would render the western uplands a more tolerable area in which to live.

With regard to the distribution of finds at coastal vantage points, such as the river deltas, Crawford has suggested that the selection of ports depended upon "the presence of a populous hinterland of effective buyers" (Crawford, 1922), and this may well be true with regard to the spread of some objects of Late Bronze Age date. In addition to this, however, it appears from distributions that early man preferred the upper reaches of rivers, for example the Teith, thereby avoiding the particularly marshy lower reaches, and the explanation of this seems to be that such sites may represent trans-country stops, or small settlements well away from the coasting traffic, which after all

may not have been of a uniformly peaceful nature.

The first noticeable and most important topographic unit in Scotland is the Highland massif, north-west of the great fault running from the Firth of Clyde to the Aberdeenshire coast. This massif is composed of mainly schists, gneisses and quartzites, with some slates, but various intrusive igneous rocks also occur in this metamorphic group. Some limestones and sandstones also can be found. Divided into eastern and western provinces by the Great Glen, the total massif covers over half of the entire country. The western province includes the Inner Hebrides, and is generally, but with some exceptions, a series of steeply-inclined mountains, with altitudes of over 3500' recorded, intersected by sea lochs and many rivers. The dissected nature of this western province is due to the effective erosion of a continuous high-level plateau by glacial action, other climatic factors, and the presence of numerous faults.

There is no continuous coastal plain, and the only practical flatlands are small alluvial deltas and beaches at the heads of bays and lochs. The eastern province contains the extensively highland area of the Grampians, including the high altitude Cairngorms, reaching to over 4000'. This region is the greatest continuous area of high ground in the British Isles, due to its only partial dissection by climatic and other factors. In the south of this region various lochs intersect the high ground, and there are also several impressive river systems. These central and eastern highlands consist of metamorphosed rocks, schists and gneisses, or crystalline igneous rocks, mainly south and east of the Great Glen.

The south-west area of the Grampians yields mica-schists

which weather readily and form a rather open soil, and this particular area comprises the line of mountains and hills lying between Ben Lawers, Ben Dorriann, and Ben Alder. The Outer Hebrides, by virtue of their relative flatness, may be conveniently considered as a separate area, and special circumstances render them, in the Late Bronze Age, a region at present scarcely known.

The other major area of high altitude is the Southern Uplands, a dissected plateau, now a series of low mountains extending to over 2500', and stretching from the North Sea coast across to Galloway. The range is intersected by several great river systems, and is composed of sandstones, flags, shales and slates, grits and quartzites, with rare limestone bands.

The major lowland area in Scotland is the Midland Valley, extending from central Ayrshire to the Lothians and the Angus coast. It is bounded on the south by the Lammermuir, Moorfoot and Pentland Hills and other extensions of the Southern Uplands. On the north, the Highland massif provides an abrupt boundary. The Valley itself is broken by a series of small ranges of hills, the Lennox, Ochil and Sidlaw Hills, and by the long sea extensions of the Forth and Tay. Old Red Sandstone is found on both sides of the central valley, consisting mainly of conglomerates, flags, sandstones and shales and marls, with some calcareous material as well.

Two minor lowland areas lie to the south, beyond the Uplands, the Merse of the Lower Tweed and the coastal plain of Galloway which extends right around the Solway. More extensive coastal plains occur in north-east Scotland, and these are important settlement areas. The Formartine and Buchan lowland regions extend along the coast to the

Laich of Moray and up the Ross coast to Caithness, with an interruption of high ground centred around the Strath of Kildonan, and at Troup Head as well. The lowlands continue on to Orkney, although the Pentland Firth is not considered as a unifying factor. This area of north-east Scotland also contains much Old Red Sandstone, flags, shales, sandstones and some limestones.

Overlying much of the area of Scotland is drift, generally composed of a boulder-clay with striated rocks and rock fragments. The clay fraction is considerable, and this accounts for the notable setting of the drift, impervious to much water action. The drift is spread fairly well over the lowlands, up to about 1000' on the hills, and also occurs in thin sheets in the Highland massif and the Uplands. Boulder clay is generally absent from the mountains except in the widest valleys, and some areas have been scraped clear of all superficial deposits, such as Sutherland and the Hebrides. The heavy and damp till seen in the central lowland plain and in areas of Strathmore is alluvial or glacial, and has not been subject to the erosive action seen in the higher regions. The loamy drift derived from the Old Red Sandstone is the most fertile, and is widespread in the Lothians, Fife, and Strathmore, but the drift from high base-status metamorphic rocks in the Formartine and Buchan areas is also of considerable fertility.

Scotland is partitioned both by land and water masses into several great divisions, and these into a remarkably regular series of lowland areas, some of which were particularly favoured for settlement by people with a Late Bronze Age economy. A rapid survey of these lowland areas will be found to be of value in the consideration of the

significance of find-spots seen on map 1.

The most south-easterly lowland area is the Merse of the Lower Tweed, but must have been too marshy to permit of any settlement in the Late Bronze Age, although it may have been employed as a convenient route leading into central Scotland. Its lower reaches are not believed to have been impossible of ascent or descent because of the density of undergrowth and marshlands, as in this connection the smaller rivers would have been most affected.

North of the Merse, the Lammermuir Hills provide another barrier to overland traffic between coastal north-east England and the Lothian Plain, as the nearly complete absence of finds from the Border to Dunbar show. The fertile Lothian Plain has yielded a concentration of Late Bronze Age finds unduplicated elsewhere in Scotland, especially in the Edinburgh region, and this must be accepted as representing something more than the intensive development and excavations in the area can explain.

The lowland area of the Lothians is extended across the Firth of Forth, a link rather than a barrier, to the Fife peninsula. This does not show the same density of finds, but it appears that the central area was favoured for settlement or travel, connecting with the unexpected number of finds along the Teith River, the significance of which is suggested below.

An extension of this lowland area into Strathearn and then across the Tay, where the numerous finds probably represent fording accidents or landfalls from coastal traffic, leads to the Angus coast and Strathmore with the minor interruption of the Sidlaws. Settlement in this area appears to have been considerable. A reduction in the

number of finds of Late Bronze Age date marks the point where the Grampians extend down to the sea, and the fertile coastal plain disappears north of Strathmore.

Beyond the Mounth and Garron Point, Deeside and the coastal plain of Formartine and inland Garioch regions have yielded much evidence of Late Bronze Age settlement, the use of the Rivers Dee and Don being especially marked. The moorlands north of this area, in Buchan, do not show such concentrations but the Ythan appears to have been employed possibly as a route to avoid the Kinnairds Head coastal dangers. The hills reaching the coast at Troup Head would also hinder overland coastal traffic.

The south shore of the Moray Firth includes the wide and low-lying plain of the Laich of Moray, where considerable settlement is evidenced by numerous finds, to a certain extent of a nature distinct from those of the Aberdeen area. Linked to the Laich of Moray by the Beauly and inner Moray Firths are the Black Isle and Easter Ross, where the number of finds begins to lessen until the Helmsdale mountainous area appears to have precluded any substantial occupation.

North of this highland area, the Caithness lowlands extend to Strathy Point where the mountains begin to close in again. The Orkneys and Shetlands are other low-lying areas, particularly the former, but nowhere in the far north of Scotland is the Late Bronze Age well represented.

Down the west coast of the mainland, and including the Inner Hebrides, there are no major lowland areas, although several important alluvial deltas exist at the head of lochs such as Ewe and

Broom. The Outer Hebrides are mainly low-lying, although Harris divides the islands into a northern province of Lewis and a southern one composed of the Uists, Benbecula and Barra. The almost total absence of Late Bronze Age finds from the Outer Hebrides is hardly explainable by climatic factors, although some evidence suggests that the islands were entirely too damp for settlement in the first millenium B.C. The few finds from the northern-most tip of Lewis are almost certainly the result of sea voyages, of traders or warriors, and not of settlers.

On the mainland, there are no lowland areas worthy of note from Sutherland to the Clyde, and the sparse finds from islands such as Skye are also probably connected with sea voyages around the north of Scotland, the Irish - Scandinavian route. Finds from more southern islands, such as Islay, are more probably to be related to the Great Glen route leading from Ireland or Galloway to the Moray Firth.

The lowland area around the River Clyde almost certainly would be too damp for much effective settlement, and this applies equally as well to the inland extension of the Forth. To the north of Clydesdale, the Lennox lowland area joins this Carse of Forth and probably together presented a barrier to overland transport from southern Scotland.

The use of the Clyde as a means of inland penetration however is fairly well documented by a string of finds stretching down to the Biggar Gap. And joined to Clydesdale by the Black Cart and Garnock Waters is the central Ayrshire coastal plain comprising Kyle and adjacent coastal areas north and south. The comparative rarity of finds of Late Bronze date in this region is surprising, and possibly

the numerous finds in southern Kintyre and Arran, including many objects of Irish inspiration, shows the disregard for the Ayrshire coast by traders and settlers heading directly for the Great Glen, avoiding the tidal races of the Mull of Kintyre and the open Sea of the Hebrides, or for the Clyde and the prosperous east coastal settlements. Nevertheless, the fertile nature of the Ayrshire plain is not be disregarded. Possibly the proximity of the area to Ireland was a discouragement to settlers?

The Southern Uplands extend to the coast in north Galloway and separate these Ayrshire lowlands from the Galloway coastal plain, which can be divided into The Rhinns, The Machars between Luce and Wigtown Bays, and the coast between Wigtown and the river Nith. This last is separated by Criffel from the low areas of Nithsdale and Annandale which combine into the Solway coastal plain.

Neither these minor lowland areas nor the major divisions of Scotland are fixed and irrevocably distinct, for there are many passages that more or less effectively join the regions to each other. The Southern Uplands are traversed by valleys running north - south; in the east the Whiteadder, Leader and Gala Waters cut through the hills and allow passage to the Lothian plain. The Tweed itself extends far into the mountains, and by this manner access to the Lothians via Eddleston Water or to Clydesdale itself via the Tarth and South Medwin or Biggar Water may be gained. The Firth of Forth and Forth River link the Lothians with the Carse and Fife peninsula, and this last is joined to the Angus coast by the Firth of Tay and thereby to Strathearn and Strathmore.

The Howe of Mearns and Deeside may be linked only by the

coast, but from Deeside there is an unbroken stretch of lowland up to Troup Head, where some difficulty might be encountered before reaching the Moray coastal plain. From the Laich of Moray accessible land can be found as far north as the Loch Brora region where the mountains crowd the sea. Caithness and Orkney across the Pentland Firth may have been effectively divided by this notorious passage.

Turning again to the southern lowland areas, links across the Midland Valley may have been of considerable importance, the Clydesdale and Carse of Forth areas connected by the Lennox region, and this leads on to the Lothian plain, although the Carse and Lower Clyde were probably extremely damp. The Black Cart and Garnock Waters link this Midland Valley with the central Ayrshire coastal plain, as previously stated. From this point the coast grows narrow until the wide comparatively uninterrupted coastal plain of Galloway is reached, which extends from The Rhinns eastwards and around the Solway Firth.

From the Solway, the route through the mountains to Clydesdale is easily traversed by the use of Annandale, and similarily, the southern lowlands are connected to the central Ayrshire plain by Nithsdale or the Ken and Doon valleys. Teviotdale provides a link between the eastern coastal lowlands and the Solway plain. Connections between low-lying areas in the Western Isles are dependent on the strength of the tidal waters, but Cowal, Arran, Bute and Kintyre are effectively linked with the mainland proper and to each other by their respective waterways.

The importance of cross-country routes should also be stressed here, as these played such an important part in Late Bronze Age traffic. Glen Mor is, of course, the major connection, linking the

main western areas with north-east Scotland, that is, the Atlantic with the North Sea, and the result of the discovery of this passage is one of the most important features of Late Bronze Age Scotland.

This route utilized a series of deep lochs and some river stretches, with short and relatively easy portages around some rapids in the River Lochy and between Lochs Lochy and Oich, and Lochs Oich and Ness as the River Oich is a comparatively difficult stretch to navigate. Some slight evidence of the use of this route in the second millenium exists, and is matched by the lack of finds of first millenium date, but as the route is relatively simple, little time would be required to complete the journey, and only temporary camps would be needed. The main evidence for the employment of this Great Glen route lies in the numbers of Irish-type objects along the Moray coast.

Loch Linnhe was also the entrance or exit of a cross-country route linking the west with the Moray coast, via Glen Spean, Loch Laggan and Strathspey.

Other routes linking the west with the eastern areas, in this case the Tay, could have begun in Loch Linnhe or the Firth of Clyde. From the former, the ascent through Loch Leven and the Blackwater to Loch Rannoch and Loch Tummel requires a considerable amount of portaging or travel over high ground, and its use in the Late Bronze Age is not evidenced, although sites of later date have been found along the eastern stages of this possible route.

From the Firth of Lorne, a more suitable passage leads through the Brander Pass to Glen Orchy from where a route strikes off to the north via Black Mount and the watershed of Lochs Rannoch and Tummel, or to the east via Glen Dochart into Loch Tay and Strathtay.

Another route begins in Loch Fyne, passes along the Fyne into Strathfillan and thence to Glen Dochart and Loch Tay. Loch Lomond was probably a convenient starting point for most of the central transcountry routes, reached either by the short portage from Loch Long or by the ascent of the River Leven which is navigable throughout its length. There is some slight evidence of second millenium settlement along this river, but none dating to the Late Bronze Age. However a single find from Glen Fruin may suggest a third route of access to Loch Lomond. From Loch Lomond a short portage to Loch Arklet and then to Loch Katrine leads easily into Loch Vennacher and thence to the Teith, from which point access to the Forth was easily achieved.

Alternatively, the Leny could be ascended to Loch Earn and eventually the Tay was within reach, although by a roundabout way. From the top of Loch Lomond, Glen Falloch necessitated a steep portage until navigable water was attained in Glen Dochart and Loch Tay. Another, via Loch Voil and Loch Earn, involved a steep climb from Loch Lomond. The main routes, from Lomond to the Tay via Loch Tay or Loch Earn, appear to have been employed in the second millenium as in the first, although the great number of finds along the Teith suggest that this route was in considerable use.

The Clyde - Tweed route appears to form an easy passage across the country, but it is difficult to illustrate the use of the route in either the first or second millenium B.C. The Clyde is navigable to its bend near Biggar, where a portage along the Biggar Gap led to the Tweed - Biggar Water junction, although it is possible that the intermediary stream itself was partially navigable. From the Tweed, employment of Gala or Leader Waters would lead to the Forth. The Clyde could

be reached via the Garnoch River and Black Cart Water, thus avoiding the more dangerous upper Firth of Clyde.

The gaps in the Lammermuir Hills have been mentioned previously, and the Tweed and its tributaries also cut into the Cheviots. Liddesdale or Eskdale probably joined fairly readily with Teviotdale and the Merse, providing a link from Solway to Tweed. The finds between Loch Ryan and Luce Bay probably represent overland traffic avoiding the dangerous voyage around the Mull of Galloway. Another lowland route is that between Loch Crinan and Loch Gilp as alternative to the long sea trip around the Mull of Kintyre.

Farther north, numerous routes joining the western coast with the Great Glen may have been in use, most involving some high level climbing but made relatively easy by the employment of lochs and rivers. Only one or two need be mentioned here, and it is difficult to find evidence of their use from Late Bronze Age distributions. Lochs Alsh and Duich lead from Skye into Shiel and over a height into Loch Cluanie, thence a lower passage via Glen Moriston to Loch Ness and the Moray coasts. Loch Nevis or Loch Morar leads easily into Loch Arkaig and thence to the Great Glen, as well. It may be that the Sound of Mull was a popular passage from Skye, where a considerable Late Bronze Age population must have been present, leading to the Great Glen and Moray, especially so if the glen and loch routes mentioned were rendered impassable by heavy forest growth or bog areas. The use of one of these routes is suggested by the identical objects, cast in the same moulds, from the Point of Sleat, Skye, hoard and from the Cullerne, Morayshire hoard, both associated finds showing Irish influence.

Routes across the mountains further north are more difficult to determine, but several seem to be well within the reach of prehistoric people. Loch Torridon or Loch Maree leads through low country to Loch a' Chroise and Strath Bran to Conan and the Cromarty Firth. Another route across the north lies from Enard Bay through low country to Strath Oykell and the Dornoch Firth.

Strath Naver and the Strath of Kildonan may have been linked by the inland loch series and have thereby provided an alternative to the rough sea passage through the Pentland Firth. The Wick and Thurso rivers seem to have provided a similar bypass, with a short portage necessary between Halkirk and Loch Watten.

Further south, the Deveron - Ythan rivers link the Moray coastal plain and the Aberdeenshire lowlands, thereby avoiding the more rugged Buchan country. Only a small portage at the Bridge of Alvah prevents a clear navigable route along these waterways.

In connection with the majority of these inland routes, it must be remembered that only those providing some relief from the heavy forest growth and boggy areas would be in use, with those rivers that were easily navigable being preferred to the marsh-lands of some lochs and smaller streams. The portage distances would also be carefully considered. Ferry passage across the major rivers and firths seems to have been extensive, as the finds from the Tay illustrate. Other easy crossings may have been made at Kessock on the Beauly Firth, Invergordon on the Cromarty Firth, and Meikle on the Dornoch Firth; probably Queensferry was the most popular spot for the Forth crossing, although several locations farther inland could have served equally as well. In all these cases, the long land journey around the shores

would have been rendered even more difficult by the forest and undergrowth, and a ford would have had to be made somewhere along the line. It may be surmised that the Solway Firth was crossed by ferry, perhaps near Bowness and Annan, to avoid the damp overland passage. The more or less continual discovery of dugouts leads us to suspect that these or their ancestors may well have been in use in the first millenium B.C., although none has been assigned to the Late Bronze Age with certainty.

The western sea route, employed extensively in the second millenium, and to a far smaller degree in the first millenium, stretches from The Rhinns to Cape Wrath, but clings mainly to the innermost islands. The direction and force of tidal streams along the west and north coasts obviously played an important part in the determination of the specific routes used, and the suggested routes are based on these data as well as distributions (Kirk, 1957, p. 83, fig. 5).

The Tidal races around the Mull of Galloway possibly account for the find-spots lying between Luce Bay and Loch Ryan, although the Galloway Water of Luce may also have been employed in this regard. A similar situation appears to have existed in Kintyre, the tidal streams being of considerable force, probably sufficient to account for the portages between Loch Fyne and Loch Crinan or between Loch Fyne and West Tarbert. The evidence of second millenium settlement points to the former as more probable, and to ports of call at Arran and Bute. Once on the west of Kintyre, the journey could continue through the Sound of Islay or north of Jura, leading into the Firth of Lorne and Loch Linnhe, and to the Great Glen route.

Alternatively, the voyagers might turn westwards and pass

through the Sound of Mull and the sparse finds from Coll and Tiree suggest that these islands may have been employed as points of departure for the Outer Hebrides or even Skye, with ports of call at Muck and Eigg evidenced by other finds of first millenium date. The evidence as a whole however suggests that Skye was the departure point for the Outer Hebrides, as Barra has yielded few objects of second or first millenium date.

The western part of Skye was probably the port of arrival and departure, as the sea voyagers would avoid the more dangerous waters to the south and east of the island. From North Uist, a series of finds of second millenium date stretching up to Lewis, has suggested that it was from this point, the Eye Peninsula, that the long route to the Orkneys began afresh. The evidence for this is limited to this earlier time, as first millenium finds from both the Outer Hebrides and the Orkneys are notoriously rare.

Yet the Scandinavian - Irish connections during the Late Bronze Age are clearly documented, so that the route, bypassing the Scottish mainland as much as possible apparently, must have been in considerable use during the first millenium. From the Eye Peninsula, it is presumed that some point on the mainland, south of Cape Wrath, would be reached and then the actual rounding could be planned or delayed for good weather.

Alternatively, the north coast of Skye may well have served as the jump-off point for Cape Wrath, or the arrival point from the north, avoiding the Outer Hebrides, in the first millenium. Coast-hugging tactics would of course be necessary, and it is difficult to

decide whether the easier route lies via Lewis or not. Once Cape Wrath was rounded, the northern coast of Scotland provided sufficient shelter and anchorage, from the Bay at Durness to Dunnet Head, and from here the short voyage across to the Orkneys was easily performed, both as a port of call and to avoid the Pentland Firth. From here, or from the Shetlands, the open sea awaited the voyagers to Scandinavia, although it appears that some direct contact between Northern Europe and north-east Scotland (Moray Firth and Aberdeenshire) took place, possibly in the second millenium, certainly in the first.

A further division of Scotland should be mentioned here, shown by the separate natures of the Late Bronze Age in the east and the west. The dividing line is formed of the Central Grampians, the bog and forest of the Midland Valley, and the high ground of the Southern Uplands. This division of the country into two parts will be seen to be the most important of all the regional areas, even more so than the north-south partition, with the Midland Valley providing the barrier. In this east-west regard, the importance of coastal traffic can hardly be over-emphasized; the west coast and isles received their major contacts and influences through this medium, and it should be noted that there is hardly one coastal strip or island that cannot be viewed from its neighbour, and the continuous spread of settlers and traders up the west coast and out to the islands can be explained in this way.

Along the east coast, the traffic leading from the Tweed area to the Lothians and the Tay and further north must have been primarily by water, and the traffic down from the Moray coast and Aberdeenshire was probably of the same nature. The Drumalban spine

then divides the country into two areas, the one receiving incursions and influences from eastern England or the Low Countries or Scandinavia, the other accessible to voyagers from Ireland, western England or Wales. The general picture that emerges from distributional studies of Late Bronze Age Scotland combines this east-west division with the north-south partition, with only the north-west sector showing a mixture of elements from other areas.

Of the lowland areas listed above, those with the most fertile agricultural land appear to have been recognised, and exploited to a greater degree, than other land at similar altitudes but with poorer quality soil. Of these primary areas of settlement, supported to a remarkable extent by distributions, the Lothians stretching from Cramond to Dunbar and beyond, provide the best example of the preference of people in the first millenium B.C. for the most suitable agricultural land, notwithstanding the probable forest growth in the area.

It is of course possible and probable that settlers in the second millenium had been attracted to the same region, and that much of the clearance had been completed by the Late Bronze Age. The concentration of finds in the Lothians clearly is not due solely to the considerable amount of excavation and agriculture that has revealed the finds in the last century.

A similar area of high-quality land extends from the north bank of the Tweed to the Blackadder, and lies in a fertile strip from the coast to a point north of Kelso. A third region is centred on Clydebank and another along the central Ayrshire coast. To the north of Wigtown Bay a small area of this "first-class land" is found.

A much larger area extends around the coast of the Fife Peninsula from Kirkcaldy to Fife Ness, thence to Leuchars with an inland extension to Cupar, and from Tayport to Newburgh along the Firth of Tay. A wide coastal belt lies along the north Tay bank from near Perth through Dundee, Arbroath, and Montrose to Gourdon. These are the areas considered best for agriculture by present day standards, and it seems unreasonable to assume that these standards differed by much in the first millenium B.C.

The problem of forest cover enters into the question, and will be discussed below, but the fact that distributions of Late Bronze Age objects fall precisely in most of the areas mentioned already, and those detailed below, certainly points to the premise that the criterion of good-quality land has changed but little in the last few thousand years. Local factors of course enter into this, such as the preference for a pastoral or cultivation economy, and soil exhaustion. The above areas are without exception level or slightly undulating, with deep and fertile soil, but other land in eastern Scotland, while somewhat less level, has been considered as comparable in quality because of its deep soil and fine drainage.

These lands lie adjacent to the above-mentioned areas along the Tweed, in the Lothians and the Fife-Angus-Kincardine region, and also extends from the Clyde to the Forth through the Vale of Kelvin and along the Carse of Forth. With regard to this secondary type of land, it seems likely that in some areas at least the dampness present in the first millenium, as in the previous period, would render any form of cultivation or pastoralism extremely difficult if not impossible. The

Carse of Forth is, of course, the best example of this situation. A better-drained area stretches along the coast from Aberdeen to Kinnairds Head and thence westward along the Moray Firth and, in slightly less fertile state, up to the Dornoch Firth.

The Laich of Moray in particular is notable for the excellent quality of its soil, and agricultural activities could have been carried out on both the sandy shores and on the 100' terrace behind. The violent storms of the past several centuries have halted the exploitation of the seaward part of this coast, but distribution suggests that this was not the case in prehistory. A small patch of fine land lies in the Wick area of Caithness, although few finds of the Late Bronze Age have been made here, possibly because of the area's proximity to the Scandinavian sea route; contact with Northern Europe may not have been entirely peaceful.

In the south-west, an area around Campbeltown appears to have been inhabited in the first millenium, and the fact that this region is noted for its fine agricultural land should be noted, as well as the Loch Indaal area of Islay and southern Bute. Other soils of considerable value, and on the whole recognised as such by people in the first millenium B.C., are to be found in Galloway, The Rhinns and The Machars in particular, and a coastal stretch from Southerness Point eastwards to the Esk.

Heavier soils, fertile but restricted by drainage problems, lie mainly in the Aberdeen-Banff triangle, in Caithness, in the Fife Peninsula, in Galloway and Dumfriesshire, and in the central Ayrshire plain. These areas seem to have been utilized fairly extensively,

judging by the distribution of finds. Medium-quality lands, worthy of cultivation but not of the best quality by virtue of slope, climate or soil, occur in the Lothians, Lanarkshire and the south-east, in the Moray Firth area and in some parts of Aberdeenshire, and in the south-west, with many smaller regions of importance, such as the coast of Kintyre and Loch Fyne, the Firth of Clyde coasts and the shores of Arran, and the Crinan area, as well as more northern areas such as Loch Broom and Gairloch and along the Great Glen.

Finds of Late Bronze Age objects from these poorer areas are fairly numerous, but in the majority of cases it is possible to see hunting expeditions rather than agricultural pursuits as responsible for the find-spot. These poorer areas would almost certainly be covered either by dense forest or bogs and marshes, and most presumably remained practically untouched by prehistoric man. The development of forest and bog in the milleniums B.C. influenced and curtailed the spread of man's activities, and it is of some interest to consider the reasons for such developments.

One of the most important factors in the determination of the habitat of Scotland is climate. In general, the impression is that the Highland Zone of Britain is a relatively sunless and damp area, and that the climatic contrast between the Highland and Lowland Zones of Britain is sufficiently marked to necessitate an alteration in the mode of life of invaders from the Lowlands. This statement appears to be too generalized for outright acceptance in view of the occurrence of considerable areas of lowland in the Highland Zone, some of which does not and presumably did not receive the sunless and damp climate commonly

believed. The Laich of Moray is a case in point. However, several factors enter into the determination of the nature of the climate and thereby the habitat of Scotland, and the first of these is the generally high altitude of much of the country.

In the upland areas, the peaks of the mountains lie close to what we may call "snow-lie" conditions. The early summer being a crucial period for the growth of plants, the extent and duration of snow-lie therefore affects the spread of vegetation in this high mountain area. But these very high altitude regions can be disregarded in connection with the problem of prehistoric settlement, and the general proposition may be stated that affects the major portion of areas other than lowlands. This is that much of the country lies within an altitude at which an increase in height is in ratio to the increase in rainfall.

The rainfall itself may not be so important but the evaporation rate can be seen as the main factor in the rendering of the land as suitable or not for human occupation. A comparison of the evaporation rates for highland and lowland areas, and we may accept the suitable regions of Scotland for this purpose, show that in the highland area there is no month in the year when rainfall is lower than the evaporation rate, while in the lowland area, just under half the year reveals a rate of evaporation that equals or exceeds the rainfall. The importance of this simple fact is obvious, for in the lowland zone the summer months will see a soil-drying process, that is not present at all in the highland zone. The soils in the upland areas will be constantly waterlogged, and only the slopes will show soil that is sufficiently aerated and drained.

The implication is that in this upland area, where the

rainfall is of sufficient quantity, bog formation will always be present or pending. In the area under discussion, an annual rainfall of about 50", which is around three times the evaporation rate, will be sufficient to begin the process of bog formation, topographical conditions being unsuitable. The Ordnance Survey map (Rainfall, Annual Average, 1881 - 1915, sheet 1) shows at a glance that practically all the area of north-west and much of central and south-west Scotland fall within this rainfall range, and only local conditions of slope and drainage would have rendered these regions free from bog in the Late Bronze Age, if we can accept that the conditions regarding rainfall and evaporation have not altered substantially since this time.

The position in the eastern areas of Scotland is different, and most of the regions of lower rainfall coincide with the lowlands up the east coast, from the Tweed to north-east Scotland. In the upland area, where the rainfall is particularly high, latitude does not seem to play any important part in the establishment of the effective humidity. However, it is evident that much of the moorland seen today in the east is not overlain by bog formations, even though the effective humidity rate may be high enough to suggest that such a development should take place. Other factors must be taken into consideration, such as mean temperatures, cloudiness and of course, the local topographical conditions. All these have important roles in the amount of soil drying that will occur in the summer months. The cloud variable has been considered as particularly effective, and the central highlands illustrate this best; the Cairngorms and other eastern mountains are often cloudless while the mountains in the west are clouded over, the difference

occurring to the sides of a north-south line drawn through Loch Ericht. The above conditions are not considered to have altered in any great degree since prehistoric times.

The importance of these factors on the flora and fauna of a region shows not so much in the differences in species between highland and lowland areas as in the proportional representation, although the smaller fauna and much of the flora will be noticeably different. Thus the effective humidity of an area will have a considerable bearing on the environmental conditions that determine the nature of human settlement.

Allied to humidity in this connection is temperature, which also exerts a considerable influence upon the suitability or otherwise of an area for occupation. The differences in the representation of mountain species of flora and fauna between east and west highlands must be due to a combination of the two factors, as the effective humidity of these areas is generally similar. A higher average temperature, such as occurs in lowland areas, will naturally exclude some mountain types through greater heat, and the reverse is true as well, some lowland species will not survive in the colder highlands. Thus some sort of organic zonation may be said to occur with altitude increase and temperature decrease. The obvious effect that altitude has is on flora, and this results in faunal changes as well, although local effects such as wind shelter may extend the altitudional zonation.

A second important factor in the determination of the habitat of Scotland for prehistoric man is soil. The surface available for cultivation or pastoralism may be stable or unstable, depending

upon whether or not erosion is still in progress. The unstable surfaces are those rocky parts that are undergoing weathering, and the manufactured soils may remain in place or be carried and redeposited as alluvial plains or banks by a numbers of factors, erosion, solifluction, streams, rain, or glacial action in times past.

The character of a soil is determined by the nature of the parent rock, the relief of the locality which affects the drainage and leaching, and the weathering process which is controlled by the climate to a great degree. The time element also enters into this, as well as the flora that may be present already. The effective nature of these soils may be expressed in terms of the amount of non-basic material, silica, which is present in igneous rocks. For example, basalt and gabbro have a silica content of about 50%, and are considered to be Basic. Granite has about 70% silica and yields soils that are sandy with little fertility. Thus areas that show a preponderance of Basic and ultra-Basic rocks, about 40% silica, will yield a more varied flora and fauna. Yet it is important to realise that this favourable feature of a high base content may often be reversed by the extreme hardness of the rock and the resistance to the normal weathering and erosion.

Upland soils are rarely stabilized and generally have a high base status, which has been little affected by chemical change, but the more or less permanent rain-wash leaches the surface, and the bases thus removed are deposited below in what becomes flushed areas. Other rich areas may be the result of the deposition of freshly-weathered rock particles, and thus flushed areas may occur on screes, steep slopes and accumulation deposits, and will show a rich and varied flore. When

surfaces become stabilized, however, they tend to become leached, and this podsol effect is characteristic of eastern upland areas where the rainfall is relatively slight and the parent rock is gravel or sand moraine.

In the west, the damper conditions prevent the formation of podsols, and the typical cover of stabilized areas is bog, as previously described, while the lowlands show the common brown-earth deposits. The surface layers, while leached, still retain some of their bases and colour, and deciduous forest may survive and regenerate. In the uplands, brown earths are only found where the parent rock is base-rich or where flush effects maintain the supply, and in some cases the vegetation itself can renew the base supply. Mica schists often yield a brown-earth type of soil, because the high base status, friability and micro-relief afford enough material and protection to enable the soil to be formed in considerable quantities. Forest cover may also have some effect on the leaching process; oak leaves, with a high lime content, will retard leaching to a greater degree than will a birch or pine forest.

Nevertheless, it is clear that in an upland area, leaching will take place at some time or another, because of the high summer rainfall. In the lowlands, the evaporation rate exceeds the rainfall in some areas, and the effect of this is that base-rich water will ascend from below in capillary action. Leaching in the uplands results of course in the formation of hard pan layers, and the continual rainfall will ensure the waterlogging of the upper soil, which leads eventually to the formation of peat and poor drainage. As the bog becomes estab-

lished on a slope, seepage will result in the formation of similar deposits on the lower slopes, and this is the main reason why so little of the original forest remains in the west. Its duration of life is still the primary problem in the attempted determination of the forest and bog cover in prehistoric time. It should perhaps be mentioned that the effect of grazing over a long period is the same as that of leaching.

With limited cultivable land and only small numbers of domesticated animals, the early settlers would of necessity depend to a great extent on hunting and fishing. In the early stages, the mixed oak forests of the lowland areas and more upland birch areas supported a varied composition of game. Red and roe deer, elk and wild cattle were hunted in more southern regions, while to the north the reindeer had survived the climatic change from Late-Glacial to Post-Glacial. The red deer in particular was abundant in both upland and lowland zones. Other animals favoured for meat and skins were the brown bear, wild boar and hare. The carnivores, wolf, wild cat and fox included, would presumably pose a grave threat to stock-raising, and the wolverine in particular would menace successful trapping.

In addition to hunting, fowling probably played an important part in the search for food, with sea fowl especially favoured. Fishing was a regular occupation in suitable areas, both inland and coastal, and sealing and whaling presumably were attempted successfully, (Jarlshof, seal and whale bones) especially in the Orkneys and the north-east coast. River fishing also was an important adjunct to the food-gathering activities, and salmon, and eels possibly, may have provided regular fishing seasons. Smoking or drying would preserve these for winter consumption.

As the forests were cleared or destroyed by natural processes, the faunal proportions changed in accordance with a pattern beginning with a varied wild life, many predatory animals, many deer and semi-wild swine and cattle in a fully-developed forest. The transition to open woodland and scrub, with increased hunting and guarding of domestic animals, led to a decline in wild animals like deer and the reduction of predators as a menace, with the growth of herds and flocks. The final degenerative stage into grassland saw the reduction of deer and elimination of predators along with a great increase in sheep particularly.

The commonest form of mountain vegetation in Scotland is a poor type of grassland, the result of a combination of climate, base-poor soil, and grazing by sheep. Richer grassland is found only on steep and well-drained unstable slopes generally about 2000', but in the earlier stages of the development of grasslands, in prehistoric time, the area of richer grassland may have been of considerably greater extent. Local flush conditions on gentler slopes also support a richer type of grass. It is believed that these high-level grasslands represent the only truly ancient grasslands in Scotland.

The sub-montane grasslands immediately below this montane vegetation, at present covering much of the lower mountain slopes, are generally thought to have replaced former woodland or scrub, although these grasslands are probably naturally old in scree and other local areas, where physical instability has always prevented a more developed vegetation cover. In these lower mountain areas, local flush conditions again might support a more varied assortment of plants than the normal

grassland types.

In the Scottish highlands, the mica-schist area has probably always yielded a better-developed plant assemblage, as the rock breaks down easily into a rich loamy soil with adequate lime content. The easterly mountains of the group receive less rainfall than the western area and are therefore less likely to be leached and peat-covered. Because of this, the natural vegetation should survive in the east, except for the result of man's activities, which will exhaust the soil by both cultivation and pastoralism. In the west, peat usually smothers all but the steepest best-drained slopes, in the mountain areas, and the extent in which mountain plants can grow is greatly reduced. This process of reduction has apparently been carried on since early in Post-Glacial time.

The lower slopes with their sub-montane vegetation may show local areas with a more varied plant life because of flush conditions, and other areas where little vegetation can survive because of extreme leaching. Generally however the grasslands represent, together with most of the moorlands, derivation from former woodland, and a detailed examination seems unnecessary. In most of these areas, fragments of natural woodland still survive. One type of flushed grassland, lying on alluvial pastures, may have never been preceded by forest because of local conditions of altitude or wind.

It is probable that a certain amount of moorland and bog areas have always existed in Scotland, since Post-glacial times. Any acid or base-deficient soil, or one of boggy type, will prevent the development of trees and cultivation. Moorland may be of several types,

none of which require much discussion in the present context. Bilberry moors occupy and perhaps have always occupied high and narrow ridges in Scotland. Heather-moor is the commonest type in the lower areas of the uplands, and today has spread particularly on the eastern sides of the highland mountains, and in Galloway as well. Probably the majority of these heather moorlands have only recently been derived from woodlands, mainly pine.

Areas of deficient drainage, waterlogged areas, are naturally commonest in the western high rainfall region of Scotland, and the vegetation here will generally develop into bog. These areas are characterised by deep peat and by the presence of bog-moss. Rannoch Moor is an example of this moss or bog type, but several variants of this Sphagnum bog occur. Mixed moors also occur, where continuous Sphagnum cover is not present; this generally is found overlying deep peat, and thus show a development from the blanket bog. The suggestion therefore arises that in these areas a more humid climate formerly obtained. In general, however, mixed moor, and to a certain extent bog and moorland, would not enter into the prehistoric landscape in the degree that they occur today. It is also however certain that bog and moorland did enter into the early environment because of the relatively indecisive variation in climate that has taken place since then, and because of the find-spots of many objects, particularly of the Late Bronze Age, lying deep in peat beds.

It is true that some bronzes have been reported as having been found at the base of a peat bed, resting on morainic or other glacial deposits, but the majority of peat-associated finds have been

made well inside the peat deposits. It is therefore certain that peat was forming in considerable quantities in the Bronze Age, and the fact that some of the heavier objects may have sunk in the peat only adds strength to the argument.

The former extent of woodlands in Scotland appears to have been up to altitudes as much as 2000', and this will be considered in greater detail below. It is clear that much of today's grasslands and moorlands, certainly those at lower altitudes and where the soil is lime-rich and on the steeper slopes, were formerly woodland of one type or another. Fragments of these once-extensive woodlands in the Highland Zone of Britain are of five types, oak, alder, pine, birch, and mixed.

The first four are characteristically found on stable and more or less leached soils, while the mixed forest occurs on unstable or flushed soils. As leached soils are more usual in the uplands, the mixed wood is limited to areas of only local importance, such as the sides of gullies and near cliffs where weathering ensures a constant source of soil bases.

The mixed wood is made up of birch, ash, some elm and sallow in damper areas, and possibly some aspen and willow at higher altitudes. Other species commonly seen include cherry, yew and rowan, and some hazel, durmast oak and juniper. The ground flora is generally grasses, ferns and mosses although this depends upon the type of soil. Sometimes an oak-ash-birch mixed wood occurs on upper screes, and other local areas may support patches of yew, especially in slate areas. In the west, with high rainfall, little of this mixed wood survives because of the leached nature of the soil and peat and bog growth. The only

suitable flushed areas on the west coast and Outer Isles support birch with hazel and aspen, as well as a few rowan and willows. In the Clyde valley, the "gill-woods" are of a different composition, with yew, elm and ash occurring beside various shrubs in this limestone area. The primary causes of this type of mixed wood are slope and water supply, and when the gills widen into valleys, the mixed wood changes to ash woods.

In early times, the alder woods seem to have been common and widespread. As alder prefers damp oxidising soils, these woods occupied flushed areas and alluvial plains in the higher regions, and river basins and valley bottoms as well as other areas in the lowlands. Ash and birch are found with alder woods today, but the only traces of these once-extensive woods remain on alluvial silts.

Communities of oak trees are generally found on better soils, with mild climate a necessity for survival. A few traces of high-level oak woods still exist, and are composed of the durmast oak which in general favours acid shallow soils. The lowland oak, Quercus robur, may also be found with Quercus petraea, as well as birch, rowan and holly. The undergrowth in such oak woods is dense, with many ferns, small trees and shrubs, and these conditions prevail in both high and low level oak forests. Most flushed soils today are grassland, and the oak woods have almost all disappeared, except where the leached soils are too poor or too inaccessible for grazing. In the west, where the rainfall is higher, the generally shallower and more gravelly soils produce a fern and moss undergrowth unlike the bracken and grass type seen in dry oak woods.

West of the Great Glen, a number of relict oak woods show

a pattern of vegetation with oak below birch on southward-facing slopes, and birch below pine on northward-facing slopes. The slight gradient and rich soil of some north sides will show oak and pine in this sequence, and in some few cases, the two may mingle to a certain extent; this is due to the fact that in the west the pine descends to a lower altitude than in the eastern area. Where the soil has become too highly leached, the oak woods gradually diminish and birch and pine will replace them on the acid soil. Bilberry may be associated, especially on wooded morainic material in the west, while in the east, this may be found with oak or pine or birch, because of the lower rainfall.

The lowland oak, Quercus robur, was formerly quite extensively distributed, although not to the extent formerly believed, and in general favoured the valley sides, with a dense ground flora; in southern and lowland areas, oak probably was among the dominant members of the forest communities, and only in the north did the birch, and of course, pine, replace it as the main portion of the woodland.

Birch woods are the most extensive of the forest communities in the highlands of Scotland, and their survival in many areas today shows to a great degree their former spread, as they have never been planted to any noteworthy extent as have the oak and pine. Some of the birchwoods seen today at high levels may be replacements of former oak or pine forests, but most appear on the evidence available to have developed without an intermediate forest stage. Betula pubescens, the upland birch, is commonest, although Betula pendula, the silver birch, is prevalent in eastern areas. The germination powers of the birch in acid soils aids in its replacement of oak in many regions. The ground

vegetation in birch forests includes bilberry and moss as well as grasses of various types.

The degeneration of upland birch wood to bog, which has occurred throughout the Highland zone, is the natural process although extensive grazing may produce grassland and leaching may result in the production of heather-moor, and the evidence points towards the fact that birch forest at one time extended over much of today's moorland. The relationship between pine and birch woodlands is complex, but it is evident that the species may appear alone or in company with one another.

The pinewoods are today confined to a few regions where their natural state can be attested. These are mainly in the central and north-eastern Grampians. The native is Pinus sylvestrus var. scotica, and the surviving woods are only fragments of the northern portion of the great Caledonian Forest, now to a great extent replaced by heather-moor. Possibly the Southern Uplands may have been covered by pine forest at one time. Remnants of this Caledonian Forest include the Black Wood of Rannoch, Rothiemurchus Forest, and other areas, areas of porous morainic base, but it also seems clear that pine woods once existed above oak and birch woods on other than leached soils.

In the east, with a relatively low rainfall, the semi-permanent podsolisation of the soil would result in an open form of woodland, an incipient moor, while in the west the open woodland, undergoing much rainfall, would probably be near the verge of bog development. Bilberry and moss, with varying amounts of heather, would normally comprise the undergrowth of these pine woods, which probably included much juniper, especially so in the south of Scotland on undulating ground,

now more or less moorland. Juniper may also have formed a minor band along the damper edges of oak and birch forests in the south, while the pine woods in this area must have been extensive, judging by the ecological similarities between this semi-moorland and the northern pine woods.

The remaining pine woods are mainly on the northward-facing aspects, as at Rannoch and Strathfarrar. The increased severity in these cases seems to have emphasized the superiority of pine over birch, but this is not evident as regards zonation by altitude. Here there seems to be no clearly-marked boundaries, although it is true that pine usually is to be seen at the absolute tree-line, either alone in the east, or with birch in the west. However, a few examples of birch above pine are known, as at Glen Affric, and more local areas may also see this phenomenum.

Pure pine woods exist generally in less damp regions, especially in the east. Birch woods replace pine in the more suitable areas, but conditions must be very favourable before oak woods enter the highlands, as the absolute limit for this tree is reached in the more northerly areas. Regions where pine and birch are found together are mainly western, where oceanic climate gives the birch equal footing with the pine, in many cases a superior position. There appears to be evidence that birch has in the past replaced pine in some areas, and other discoveries show that the cycle was completed in the resurgence of pine, as at Rannoch. Pine and birch now occur here on slopes of 1 in 4 or 5, at altitudes of 1000 to 1500', and birch is seen elsewhere on slopes of 1 in 2 up to nearly 2000'. However, the evidence from buried timber in the Rannoch More suggests that slopes of 1 in 9 were in general the

steepest tolerated by these trees, at altitudes of 1500'.

The sequence of vegetational change as evidenced by pollen analysis for Scotland suffers from the comparatively few diagrams that have been obtained up to the present day, and it is only when a series of analyses based on a planned distributional pattern has been recorded that accurate reconstructions of the prehistoric landscape in Scotland will be possible. The first work on Scottish pollen was done by Erdtman in 1924, and since this date others have carried on the work sporadically; recently, S.E. Durno has undertaken a long-term process, and the value of this is already becoming evident; ~~and~~ the following discussion and description is based primarily on his work, (1956, 1957, 1958, 1958a, and correspondence) but other authorities employed include Erdtman (1924, 1928, 1929), Blackburn (1946), Mitchell (1948, 1952), Knox (1954), Fraser and Godwin (1955), Donner (1957), with dating by Godwin (1956).

Three Late-glacial zones are distinguished, the first comprising the Older Dryas which may be the equivalent of late glacial advances in North Britain, including the Scottish Readvance, generally dated to about 13000-10000 B.C. The succeeding zone, II, is the Allerod and dates fairly precisely to the years 10000-9000 B.C., and the following period to 8000 B.C. saw the resurgence of cold conditions in the Moraine or Valley Glaciation in the Highlands (Pennington 1947, Godwin 1956).

It is possible that the Inchnadamph caves were inhabited in zone II, and other Late-glacial sites have been distinguished. The Allerod possibly was a phase with large areas of heath as well as

grasses and herbs, although this and zone I are as yet poor in pollen deposits. The vegetation seems to have been rather sparse with Betula nana and willows, and in the Allerod tree birches also grew, in southern Scotland. Possibly pine was present, but this not definitely established for Scotland.

The beginning of Post-glacial time still saw the presence of North Sea land in its southern part, and this has been taken as allowing the widespread immigration of plant species to Britain from the continent. Throughout the sequence of Post-glacial time, the amelioration in climate would be seen first in the south of England, and so the phases in forest development will occur progressively from south and east England to the north-west of Scotland. This sequence is duplicated on the continent, from Central Europe to north-west Germany (Firbas, 1949).

In addition to this, a further time lag that may be regional to a certain extent will be occasioned by the fact that vegetational changes may lag behind environmental changes. Such trees as oak may survive in some leaches areas because of their root structure, but the effect will be purely local and does not affect the general picture.

In the Pre-Boreal phase, IV, dated to 8000-6000 B.C., the outstanding feature was the great increase in the tree pollen as opposed to non-tree pollen, as tree birches spread over the tundra. Little information from Scotland is contained in pollen diagrams, but in England both Betula pubescens and Betula verrucosa as well as aspen and rowan formed the first forests. Some pine occurred in the south-east,

and possibly some oak and elm and hazel. The Scottish tundra was probably invaded by birch with some pine, and the same trees composed the early forests on the continent, with pine alone in Central Europe, and birch alone in the north. The north-west German plain had a mixture of these two, mainly birch, but pine was more important in the east along the sides of the Yoldia Sea.

The succeeding Boreal phases, V and VI, stretching from about 6800-6000, and 6000-5000 B.C. respectively, saw the emergence of pine as the dominant type in the south and east, and oak and elm remained in the minority. It is of importance to note that only at this time did pine compose the prevailing species in Britain, and only in the south and east. To the north and west of England, the birch remained the major component although some increase in pine is noted, and hazel was increasing as well, particularly in the west. The Scottish diagrams suggest that the better lowland areas had a bit of oak, elm and alder, as well as much hazel, particularly in the south-west, but the predominant species was still birch, and pine, while in considerable quantities especially in the north and east, showed insufficient increase to overtake the birch.

In the later stages of the Boreal, into VI, pine remained dominant in the south and east of England, although mixed forest of oak, elm and lime were spreading. The elm reached a high peak in the early part of this zone VI. Birch retained its predominance in Scotland and the north and west of England, but pine continued to replace it throughout this period, and reached its maximum in north-west Scotland and Ireland at this time. In addition to this increase, mixed oak forest was spreading, but the outstanding advance was in hazel, which in

this zone reached its peak throughout western Europe and was particularly well-marked in north Britain.

Hazel may have been associated with aspen, whose pollen has a high and rapid mortality rate, but the recorded associations are with pine and birch, and suggests that the forests must have been open and sparse, as hazel is usually only deposited in great quantities where this situation occurs. Although conditions in England may have been more continental at this time, because of the land connection, the Scottish evidence does not support the assumption that this period was drier than before, because now the bogs began to increase, with sedges and reeds. However, in eastern England, the water-tables fell at this time, although the Early Post-glacial Sea was rising and eventually, at the end of the Boreal, separated Britain from the continent, and this halted the immigration of tree flora to the islands.

The Atlantic period, zone VIIIa and dated 5000-3000 B.C., is marked by a considerable increase of alder in the early stages, and the extent of pine and birch correspondingly decreased. This is true for all of England and south and east Scotland, but in the north of Scotland the pine retained its high values seen in the Late Boreal, as the alder did not increase as importantly until later in this Atlantic period. This notable increase of alder was caused mostly by the rise in the water-table in coastal and lower river areas, but the species also spread far inland, and traces survive in the central highlands today beside native pinewoods. Godwin believes that the climate must have been warmer or more humid at this time.

In the north, the birch remained important, and in the

west as well, but more southern regions were dominated by the mixed oak forest of oak, elm and spreading lime, which have retained this position up to the present time. Oak, however, in the north of Scotland is approaching the limit of its range (Durno, 1957, 180), and so while it was undoubtedly present in some quantities in the south and east of Scotland, in the north it probably has never been as common as often supposed. The increase of lime has suggested that England, at least, had its maximum summer temperatures in Atlantic time, and other parts of Europe may have been about four or five degrees Fahr. warmer (Charlesworth, 1957).

In north Britain, however, the oak and elm never reached the peaks seen in the south, and while important at this period, the primary development in Scotland seems to have been the spread of ombrogenous bog which had begun their growth at the end of the Boreal period, and now began the process that ultimately destroyed some of the woodlands, especially those situated in more vulnerable positions. It is therefore certain that the area of forest in Scotland was decreasing in this Atlantic period. A general decline in hazel throughout the British Isles in the later stages is probably due to the denser nature of the forests, particularly those of mixed oak. The sea-level began to fall again in Atlantic times.

The Sub-boreal period, VIIb and 3000-500 B.C., has always been considered as distinguished by its more continental, drier climate. However, more recent work, in particular that of Godwin (1956) has tended to point that this dryness and warmth have been over-estimated at least as far as England is concerned. But Irish pollen analyses suggest that the island had its highest summer temperature in this period (Jessen,

1949). Generally, the opinion seems to be that the Sub-boreal was somewhat drier, although to what degree remains to be established, and this climatic change had varying effects upon the Scottish scene.

Because of the dryness, in the lowland areas especially, forest regeneration slowed down, and more open areas would spread as the forests contracted to some degree. Porous and thin-soiled regions would suffer most in this respect. Another factor to enter here is the human one, for at this time the agencies of grazing, clearing and burning, would begin to take effect, although it is difficult to determine the extent of this, and the total effect.

In addition, in the north and west of Scotland, conditions apparently became dry enough to allow extensions of the pine forest over the peat which had been the result of the more humid climate of the foregoing period. This level in peat-bogs, called the Upper Forestian, is rich in pine and birch, and is generally seen at high levels. Its date is commonly believed to be Sub-boreal, and is equivalent to the dried-out surfaces seen below peat of Sub-atlantic date, where the forest did not spread onto the peat-bogs. Many finds of buried timber have been made, and although some of these may not be of Sub-boreal date, it is convenient to discuss them as a whole, with the certainty that a good proportion are clearly of this date.

Finds of timber buried in peat, when plotted, show that trees were formerly widespread in Scotland to altitudes of 2000' and more. A few restricted finds have been made at 3000' in the Highlands, but the local nature of these, in sheltered areas, should not bring them

into the general picture. In the far north, above the Great Glen, few finds show timber remains above 1000', and this is the limit in Caithness. In other areas, most of the records mention birch as the dominant tree found in these peat-beds, but pine is also often included, especially at the higher altitudes. Other trees include alder, oak, rowan, willow, hazel and aspen, but all of these are in the minority, although alder is most common of these.

Generally, however, it is birch and pine stumps that are found, and many of these layers can be assigned with certainty to the Sub-boreal period. Upper Deeside and the Spey Valley show pine trees of this date, and this illustrates the evidence that pine was formerly more extensive, at least in these areas, than at the present day. However, pollen diagrams do not show any expansion of pine at this stage, and the suggestion has been advanced that these timber finds represent only local conditions, and that the forests did not change appreciably at this time (Godwin, 1956), and thus the idea that the Sub-boreal witnessed greater warmth and dryness should not be accepted without reserve.

In England, the zone of transition between VIIa and VIIb shows a decline in elm and ivy, and an increase in ash, and this is taken to indicate a cooling of the climate in this region, and should be represented in Scottish diagrams as well. Lake deposits of Sub-boreal date show that little fall in their levels occurred, and in general, peat of VIIa is equally as humified as that of VIIb. A slight recurrence surface, dated to 1200 B.C., occurs in some Sub-boreal deposits, and in view of all the evidence, the acceptance of an xerothermic phase cannot be accepted, even although the buried timber finds seem to represent

more than merely local peculiarities.

In Scotland, pollen from deposits of Sub-boreal age show that birch continued to be the dominant species, although alder remained important until near the end of the period. The occurrence of pine is less well-marked, and decreases are recorded, except in the north-west, where high frequencies are generally found. The forest growth may have been at higher levels than in the succeeding and preceding phases, due primarily to the effect of the reduced humidity in the west. In Scotland, oak remained much less important than in England, and elm decreased here as elsewhere, but hazel still yielded high frequencies. Some beech and hornbeam apparently constituted a part of the forests in north-east Aberdeenshire.

The general comparison of Scottish pollen of this period with that from English sites shows that the Scottish forests resembled more the woodlands of northern England than those of the south, but there was more pine and less oak in Scotland than even in the north of England. Probably some regional differentiation between the south and the north of Scotland may be infered, although the vegetation of the Southern Uplands possibly was close in composition to that of the Highlands. The oak mixed forest in the south of Scotland probably did not alter much from the previous period, as the development of ombrogenous bog that threatened to oust the oak would presumably be halted to a certain extent if the reports of increased dryness are generally true.

The Sub-boreal amelioration probably did not seriously affect the habitability of lowland Scotland and possibly it would be of some advantage to early man, especially so in the western regions.

Conditions would not be of sufficient dryness to reduce the oak cover in the valleys, and even in the Southern Uplands the birch forest probably rendered these ranges somewhat more unsuitable for grazing than in the previous period. Possibly the areas most favourably affected by the onset of somewhat drier, if not warmer, conditions, would be the low-level woodland areas in the process of, or in danger of, destruction by bog growth, and these local patches would in any case be not particularly suitable for settlement.

The following period, Sub-atlantic or zone VIII, marks a climatic deterioration with more moisture, lower summer temperatures and less severe winters. The bogs that in the Sub-boreal period had dried out partially, began to grow again, with Sphagnum, cotton-grass and other species. There is often a distinct recurrence horizon at the zone of transition between zones VIIb and VIII, and this occurs over wide areas in north-west Europe where it has been dated to 500 B.C. This grenzhorizont thus marks the boundary between the Sub-boreal and the Sub-atlantic, and coincides more or less with the Late Bronze Age - Iron Age transition in the south, but not in Scotland. The difficulty in Scotland is that no objects have been able to be assigned to these pollen zones, so that relative datings in this way are at present not possible.

A problem perhaps worthy of some mention is that in the south of England, where the zone VIIb/VIII transition marks the Late Bronze/Iron Age transition at c.500 B.C., evidence exists to show that the Somerset levels were flooded during the earlier period, i.e. before the climatic change (construction of corduroy trackways between the Polden Hills and Wedmore Ridge).

In Ireland, Jessen's recurrence surface C, often seen below Late Bronze Age - dated bog levels, has been assigned to this transition zone, and this suggests either that the Late Bronze Age was late arriving in Ireland, or that the deterioration in climate occurred earlier in Ireland. The latter idea may have some foundation.

Jessen's recurrence surface C may of course be the equivalent of Granlund's RY iv in Sweden at 1200 B.C., and if so, then the correlation of C with VIIb - VIII is mistaken, and the VIIb-VIII recurrence surface is perhaps not clearly visible for some local reason.

The more oceanic climate of zone VIII, with greater humidity especially, resulted in the accelerated growth of blanket and basin bogs, and trees on upland slopes were gradually eliminated during this period. The point at which buried timber is no longer found represents the final elimination of the forests in these areas as the dominant component of the vegetational composition, and the point where moorland vegetation arose in the uplands.

The organic content of some lake muds shows a rise in muds deposited in the centuries from the mid-second millenium to about 250 B.C. in the Highland Zone, and after this date a decline sets in. This is in support of the evidence that in this period the primary woodland degeneration took place, and the accelerated leaching would result in a high nutrient salt concentration in lakes and lochs.

Stratification of peat in the east of Scotland and upland England shows a lower layer of dark bog peat and an upper layer of light more open peat with much bog-moss. This, of course, suggests that the lower layer was partially oxidized during a halt in peat formation, and

that the upper layer represents more rapid bog growth. In the western hills, often a layer of pebbles or sand may occur in peat near slopes or in alluvial peat in valleys, as well as on areas of the 25' raised beach and on high-altitude slopes in the north-west.

The suggestion is that the underlying peat represents a period of stability, and the gravelly material a phase of increased erosion. Possibly the elimination of woodland as an effective stabilizing agent resulted in this increase of erosion, and it may date therefore to a period in the Sub-Atlantic, when the destructive climatic effects had been in force for a short time. The woodland composition changed, but the relationship between climatic and human activities as causes of this alteration have yet to be determined.

Birch generally increased in north-west Europe, mainly at the expense of alder in England and Scotland, and oak and elm, especially the latter, decreased considerably. Hazel varies as usual, but the overall impression is that it too decreased. In southern England the expansion of beech and possibly hornbeam was offset by the fall in lime, which appears to some to be the most indicative of a climatic deterioration. As stated, traces of beech and hornbeam in north-east Scotland are recorded in zone VIIb, and now these show a slight increase, probably due only to local conditions, although the suggestion has been advanced that these may represent pollen from north-west Germany, where the species is known from the Sub-boreal onwards.

As the period continued, the Ericoids and other non-tree species increase at the expense of trees, the latter comprising 75-50% of total pollen in zones V and VIIb, but falling sharply in VIII,

particularly in coastal areas, where distributions show that man was especially active. The development of bog and heath in this period was clearly great, and this trend has continued to the present, although the reforestation of pine is reversing this.

In general the sequence of post-glacial vegetation in Scotland is similar to that of north-west Europe, but some minor differences may be distinguished. Silver fir reached Scotland only in interglacial times, and spruce has the same history, as finds of the wood are now believed to be driftwood from North America (Calder 1952, Graham 1952). Beech and hornbeam occur in the south of England, and may have been present in Scotland in zones VIIb and VIII, but did not last into historical times, although beech has been planted in recent years. The main species in Scotland has always been birch, Betula pubescens and Betula verrucosa and hybrids, but in late zone VI Scots pine challenged this predominance, but with less success and later than in southern England. It appears that in north-west Scotland the Boreal period, with much pine, continued for a long time, and lasted into the Atlantic period in this respect.

The increase of alder in Atlantic time was at the expense of birch, but mixed oak forest in Scotland never approached the maximum reached in the south, although the presence of birch, alder and pine in Scotland must have outweighed the low-pollen producing oak and elm, so that the low percentages of these last two may be slightly misleading. The oak stumps previously noted in lowland sites may date to this Atlantic period. The pedunculate and sessile oak with elm and lime composed the mixed forest, and some ash may have been present, recorded

from zones VI and VIIa in the north.

The outstanding event of Atlantic times was the growth of bogs, and this was probably only locally halted in the Sub-boreal, and resumed in the Sub-atlantic when birch regained its dominance, although the pinewoods did not slump to any great extent. Somewhat later, the mixed oak forest covered the lowland and valley slopes, but some pine still retained its hold on the less fertile soils, and pine and birch were the principal types in upland areas.

NATURAL RESOURCES:

While copper is found in considerable quantities throughout Scotland, the question of the exploitation of some of these deposits in the Late Bronze Age can hardly be solved without exact metallurgical analyses. Nevertheless, the existence of bronze-working in Scotland in the first millenium B.C. is not in doubt, as shown by moulds and the rare founders' hoards, as well as by run-on repairs to swords and spear-heads.

The distribution of Early Bronze Age flat axes has been discussed in detail by Scott, who shows how their concentrations in certain areas coincide with outcrops of copper, such as in the Leadhills, Ochils, and the Garnock-Black Cart pass. These and other deposits are not as clearly marked by Late Bronze Age finds, although the Ochils area has yielded a sufficient number of objects to suggest that they may be related to the exploitation of the copper ores nearby.

Other deposits at Longformacus in the Lammermuirs, Pinmore near Girvan, Wick, Burray in Orkney, and Rousay may have been mined but little evidence of local smelting exists for the Late Bronze Age. The ores found in the Crinan and Loch Fyne areas, as around Loch Kishorn and Loch Duich, are also not well documented by Late Bronze Age finds.

A major concentration of flat axes and their moulds in Scotland lies along the Laich of Moray, extending to the Deveron and down to the Don River, across the main area of Aberdeenshire, and this is duplicated to a certain extent by the distribution of Late Bronze Age finds in north-east Scotland, particularly in the Don River area. The only large sources of copper ore in the north-east lie along the North

Esk and by Loch Ness, and may well have been exploited.

It therefore appears that ample quantities of copper ore existed in many parts of Scotland, and there seems no reason to look further afield for the source of this material for the majority of Scottish bronzes of the Late Bronze Age. By this time, information about both ore-sources and technology would be disseminated throughout much of the country and local bronze workings would presumably be of fairly common occurrence. However, the complete absence of tin from Scotland would necessitate a considerable organization for the metal's acquisition, and presumably put a heavy burden on the local populance, to maintain pleasant and profitable exchanges with the tin controllers.

The principal source of gold in Scotland lies in the streams running down from the Leadhills, between the upper Clyde and Nith Rivers, and several finds of gold objects from the vicinity may indicate an exploitation of the streams in the earlier and later Bronze Age. Other natural deposits lie in Perthshire, near Lochs Tay and Earn, and in the Isla Valley near the Firth of Tay, but the Largo hoard need not be connected to these sources.

The Helmsdale-Strath Brora region in the far north-east is another valuable source, but its discovery and exploitation is unproven in the Bronze Age, as few finds of gold objects are known from the north. The gold-bearing deposits near the mouth of the Ythan in Aberdeenshire may however have been known in early times, and the Belhelvie Parish torcs may be related. Possibly other gold finds such as at The Law Farm and in the Lower Spey may be connected to the Ythan deposits, as natural

routes connect the areas, but it is equally possible that Irish gold may account for the Moray hoard because the Great Glen route was certainly known.

The only major source of flint in Scotland lies in the Buchan region of north-east Aberdeenshire, in a deposit running from Buchan Ness to Dudswick Hill near the estuary of the Ythan. A small flint-bed also lies near Skelmuir in the same region, and several other small deposits are known, but not certainly worked in the Bronze Age. Much flint-working is attested in the Ythan district, however, and finds from the Moray coasts suggest the use of the Deveron-Ythan route in trade or expeditions. The exploitation of this flint area appears however to have been limited to Aberdeenshire and the eastern Moray Firth district. In western Scotland, Mull and Morvern limestone and chalk areas yield flint, and some working sites are known, but other Scottish regions depended upon trade or beach pebble finds. Chert is known from southern Scottish areas, but its exploitation was probably purely local.

SOCKETED AXES

RIBBED AXES:

Three-ribbed socketed axes in the Yorkshire area were first described and plotted by Fox in 1933, who stated that this type "was probably developed in Yorkshire" (1933, 158, pl. ix, fig.10B), Since this date, other facies of the same basic form have been recognized, a South Welsh group by Fox and Hyde (1939, 369, pl. lxxx, map lxxxi), and an Irish-Scottish group by Hodges (1956, 40, fig.6). These forms lie mainly in the Highland Zone, of Fox's definition, with an outlier in East Anglia, but may be combined with Clark's ribbed palstave classes, which provide a complementary distribution mainly to the east and south of the Severn-Wash line with an outlier in North Wales (Clark 1940, 52, map fig.5; Savory 1958, map 10). These ribbed axes and palstaves effectively cover most of the British Isles and Ireland with a noticeable absence in south-east England, in the main area of concentration of the carp's tongue sword complex. While the distribution and associations of ribbed axes and palstaves suggest contemporaneity with the carp's tongue complex, as detailed by Clark, the Nettleham, Lincs, hoard, with a ribbed palstave of this group, more correctly belongs to the Wilburton complex of Britain, because of its indented socketed axes, tubular ferrule and basal-looped spearhead (Arch J. XVIII 1861 159-160). Savory suggests that the ribbed palstave is descended from a form seen in the TBB group, as in the Barton Bendish hoard (Inv. Arch, GB2, 2), and the prototype of the ribbed axe also may be dated to a time earlier than the carp's tongue complex (Savory 1958, 33; and below).

The features common to the socketed axes in all the groups are an angular mouth and section, and the presence of three

vertical ribs on each face. The Yorkshire axe, as defined and limited by Fox, is an axe of average proportion, that is, with the length only slightly less than twice the width across the cutting face, with a fairly heavy moulding around the mouth and a second much slighter moulding or horizontal bar below, from which three vertical parallel ribs hang. These ribs are in general widely spaced, but three varieties may be distinguished, i) with ribs set well within the axe face, ii) with the outer ribs set nearly at the angle of face and side, that is, with widely spaced ribs, iii) with an asymmetrical arrangement, one outer bar set near the face-side intersection, the other outer bar well within the face. This last variety is relatively rare. In some few cases the vertical ribs descend directly from the mouth moulding, a South Welsh trait (Traprain Law, NMA 1922-233; Genoch Wigt, NMA DE 63).

The South Welsh ribbed axe differs considerably from the Yorkshire, the large and heavy mouth moulding having a flat upper surface (Grimes 1951, fig.61). The loop often springs from this mouth moulding, whereas in the Yorkshire axe the loop almost always emerges well below the mouth. In addition, the vertical ribs on the Welsh axe are set in general more closely together, and sometimes converge as they descend from the mouth moulding, the second Yorkshire moulding being absent. The outline of the Welsh axe is more squat than the Yorkshire axe, with the width across the cutting face approaching more closely the length of the body. The section of the axe-body is more hexagonal than rectangular.

From these two distinctly different types we come now to the Irish type, as defined by Hodges (1956, 31). This ribbed axe is claimed to be distinct from the Yorkshire axe by its squatter form, that is, closer to the Welsh type in this respect. The ribs are always parallel and the second moulding is generally present, both these features of

the Yorkshire type. The map of three-ribbed axes in Britain and Ireland shows that Hodges claims that the Scottish ribbed-axes are of this Irish type (1956, 40). For the clarification of this, simple statistical analyses have been made for English and Scottish ribbed axes, based on the index of $\frac{\text{length of axe}}{\text{width of cutting face.}}$

The Scottish index is .576, the English index is .570, and this serves to show that there is no appreciable difference in general dimensions of axes from the two areas. A comparis n of the lengths of these axes reveals a difference in size, the Scottish 3.40", the English 3.57", but clearly this is merely a reduction in overall dimensions, not a compression resulting in a squatter axe. The Kalemouth, Roxburgh,hoard, hardly of Irish derivation, contributes nine ribbed axes to these figures, and is composed of axes nearly all of which lie at or below the average length of Scottish axes, and this may tend to exaggerate the differences in length between English and Scottish Yorkshire axes. Figures for ribbed axes found in Ireland show that in general these axes are somewhat smaller in dimensions than the Yorkshire axe, but their proportions do not differ in any appreciable degree. We conclude by rejecting the theory that the Scottish ribbed axes belong to an Irish group.

The distribution of three-ribbed axes is seen on Hodges' map of Britain and Ireland (1956, fig.6) but a more complete picture of the type may be gained by combining Savory's recent maps of the Welsh and Yorkshire types as seen in Wales (1958, fig. 16 and 17), the Scottish map (map 2) and Clark's ribbed palstaves (1940, fig.5), with Hodges' distributions for Ireland and England. In particular the overlap in north-east Wales of the Welsh and Yorkshire types is not shown by Hodges.

The overall impression is, of course, of two main concentrations of ribbed socketed axes, one in north-east England, one in South Wales, although the Irish finds in the north-east of that island may be considered as more than a scatter. The absence of the type in south-east England is noteworthy and has already been commented upon.

In Scotland the only real concentration of these axes occurs in the eastern area stretching from the Forth southward to the Borders, the principal waterway being the Tweed. There are a few finds along the Teith, and a slight concentration along the Don River in Aberdeenshire. A noticeable absence in the Tay region is not limited to this type alone. One other region, Galloway, has yielded several axes of this type, but generally the west coast shows a very sparse distribution. It thus appears that both typology and distribution are in agreement in deriving the Scottish ribbed axes from north-east England. The Irish ribbed axe exhibits all the features of the Yorkshire type, and its smaller size appears to be only another example of the diminution of bronze types in the Irish Late Bronze Age; it must have penetrated to Ireland via Scotland or from the Morecambe Bay area, rather than being a composite type based on both Welsh and Yorkshire influence.

While it seems evident that the immediate origin of Scottish ribbed axes lies in north-east England, the idea of traffic across the North Sea direct to Scotland may be discussed here because of the occurrence in Scandinavia of ribbed axes not far removed from the British form. According to Sprockhoff, the Danish ribbed axes have a distribution confined to Jutland, Funen, Lolland and Zealand, with a few outliers in Pommern, Brandenburg and Mecklenburg (Sprockhoff 1941, map 121; 1956, 21, map 8, taf 6, 13). These north German axes,

the Bergen type, while not exactly identical to the Danish form are clearly related. At Bergen auf Rügen, Yorkshire-type axes occur with other ribbed axes, one of which appears to be a Danish form, dated to Montelius V (Sprockhoff 1941 taf 53, 3; Broholm DO iv fig.133).

But earlier Danish ribbed axes are known, dated to Montelius IV (Broholm DO iv, 22, 25) in hoards such as Orbaeklunde, Vestbjerg, and Grisby (Broholm DB iii, 198, 200, 181). The special interest of Grisby to the Scottish Late Bronze Age lies in the fact that its other socketed axe recalls an axe from the Bell's Mill, Edinburgh, hoard, although this latter is more exaggerated in its straightened body; Bell's Mill also contains a ribbed axe, but not of the earlier Danish form as seen at Grisby. Ribbed axes also occur in Sweden where they are dated to Montelius IV (Montelius 1922, 1056; Broholm DO iv, 25), although an earlier form, of Montelius III date, with slender body and short blade, recalls the curved ribbed axes of Sprockhoff's Lausitz type (Montelius 1922, 994, 995). But generally these earlier socketed axes seem unrelated to the British types, which appear to have had their prototype in the Scandinavian ribbed axes of Montelius IV. At a time when south-west England and the areas around the Irish Sea were receiving influences and objects from Scandinavia (the Taunton-Barton Bendish horizon) the Northern ribbed axe may have arrived in Britain where it was adopted and underwent separate developments in different area. The ribbed idea encountered the rectangular-sectioned axe common to eastern England and this resulted in the Yorkshire type. South Wales is closer to the area of arrival and this may account for the closer resemblance of the Welsh axe to the Northern form, with hexagonal section and loop springing from the socket mouth moulding. The only clear import of a Northern ribbed axe is that from

Carse Loch, Kirkcudbrightshire (NMA DE5), although its character seems to be that of an unfinished casting. Alternatively, a socketed axe in the Fredshög find, dated to Montelius IV, is close to the Yorkshire type of ribbed axe (Sprockhoff 1934, taf 5, 15).

It must however be emphasized that nowhere are the British types, Welsh and Yorkshire, dated to this early period, which is roughly contemporary with the TBB phase. Copies of Scandinavian groove-ribbed axes have been found, although, as stated, Carse Loch is the only clear import so far discovered. Axes from Kilrea, Co. Derry, and Drumee, Co. Down (Hodges 1956, fig. 1, 3, and p. 33), and from the Bourton, Glos. hoard (Dunning 1932, 283, fig. 3, 3) appear to be local copies of the Northern form. The Bourton hoard also contains a Welsh ribbed axe. Savory suggests that the Welsh axe is a product of the intrusive ribbed form and the collared and faceted Irish axe, and illustrates transitional forms (1958, Fig. 2, 4-5); however the Irish nature of the collared and faceted axe is in some dispute, and it is equally reasonable to consider the examples cited as hybrid forms.

It is not proposed to list more than a few of the associated finds from English and Welsh hoards that provide firm dating for the ribbed socketed axe contemporary with the carp's tongue complex of the seventh and sixth centuries B.C. (Reach Fen Cambs, Inv. Arch. GB17; Rosebury Topping Yorks, Arch Ael ii 1832 213 pl IV a-e ; Lulworth Dorset, Ant J. XV 1935 449; with objects of the carp's tongue complex). Other finds provide a similar date, with associations of Irish-British buckets of the early-middle seventh century (Bagmoor Lincs, Inv. Arch. GB23; Minnis Bay, Kent, Worsfold 1943 28 with Welsh ribbed axe; Meldreth Cambs, Inv. Arch. GB13; Heathery Burn, Hawkes 1957 149; these last two

finds include both buckets and carp's tongue objects). Other hoards link ribbed British axes with Late Urnfield objects as at Welby, Lincs (Inv. Arch. GB27, with Class B1 cross-handled bowl), and Hallstatt C material at Newark, Notts (Inv. Arch. GB36), with phalerae) and at Sompting, Sussex (Ant. J. XXVIII 1948 157, with phalera and B2 cauldron), and Llyn Fawr links a Yorkshire-type axe with its early sixth century objects (Grimes 1951 fig. 72).

A somewhat earlier date for the emergence of the ribbed axe, of Yorkshire and Welsh type, is suggested by the Willow Moor, Shropshire, hoard which linked a Yorkshire axe with a lunate spearhead (Ant. J. Viii 1928 30), and by Congleton, Cheshire, where a ribbed axe was found with a barbed spearhead and tubular ferrule, although the lunate and barbed spearheads occur in later contexts as well (Duddingston Loch). The Wick Park, Somerset, hoard contains Welsh axes and ribbed palstaves with tongue chape and barbed hollow-bladed spear-head, etc. (PSA 2nd Series V 1873427), and Savory suggests that this find connects the Welsh ribbed axe with the Wilburton-Guilsfield phase. A ribbed palstave also occurs in the Nettleham, Lincs, hoard, which belongs to the Wilburton phase. These rare finds of ribbed axes, and palstaves, in contexts earlier than the carp's tongue complex, supports the contention that an early form of ribbed axe, of Montelius IV date, inspired the production at a slightly later date of the Welsh and Yorkshire ribbed axes.

The dating of three-ribbed axes in Scotland is dependent to a great degree upon the associations of English equivalents, but two Scottish hoards provide firm dates for the type. The important components of the Dalduff, Ayrshire, hoard are the staples of a Class

A2 cauldron dated to the first half of the seventh century, and two fragments of a tanged sword of Northern Montelius IV date, possibly of Montelius V. The ribbed axes in this hoard are thus dated to the seventh century, scarcely later, in view of the early dating of the sword. The other Scottish hoard containing a three-ribbed axe with dateable associations is that from Horsehope Craig, Peeblesshire. Here the cart and harness mountings have been dated by Piggott to the late seventh century on the basis of Central European cart burials of Hallstatt C and D age, and on comparisons with the Parc-y-Meirch hoard which contains objects assignable to Montelius V (Piggott 1953, 175; Sheppard 1941, 1).

Other Scottish hoards are of less value. That from Bell's Mill, Edinburgh, contains, as described above, an axe comparable to the Grisby axe of Montelius IV age. The Kalemouth, Roxburghshire, hoard has nine ribbed axes and other collared and faceted axes, but neither this nor the Essenside, Selkirkshire, find can provide a definite date for their Yorkshire axes. The socketed axes from Traprain Law, however, are judged to be hardly older than the fifth century B.C., and show the persistence of the ribbed axe into the later stages of the Scottish Late Bronze Age.

It seems reasonable to assume that the variants and elaborations of the three-ribbed axe are merely further developments or parallel developments of the original form, which, as we have seen, may have evolved in Scandinavia in Montelius IV. At this time, two types of ribbed axes appear, one with heavy mouth moulding and multiple bars in false relief, the other (as at Carse Loch) with three or four ribs also in false relief but in wider grooves. Both of these forms

have short blades and it seems likely that the British and North German three-ribbed axes, which are quite close in form, were inspired by these earlier Danish forms. It is also a possibility that the Scandinavian axe, having caused the development of the Welsh-type and the North German-type axes, played no part in the Yorkshire-type axe, this last evolved from later contact with the North German form, as at Fredshög (Sprockhoff 1934, taf 5, 15).

In this same period, Montelius IV, curved bars, pellets and rings, appear on Danish socketed axes, perhaps inspired by Hungarian axes of similar date (Broholm DO iii, 23-24). This elaborate ribbed decoration continues into Montelius V and VI in Northern Europe, and occurs in hoards in Sachsen-Anhalt, Thuringia and surrounding regions; these four- and five-ribbed axes with pellet decoration are close in form to the British axes (Sprockhoff 1941, taf 40, 1, 5, 7; 1956 ii, map 11, 24 ff, taf 6, 11, 14, taf 8, 6, taf 9, 8). The Haldensleben axe is dated by Sprockhoff to Montelius IV, although von Brunn has expressed doubts as to the associated nature of this find (1954 39 -). The axe is related to one in the Launac, Herault, hoard where it is dated to Hallstatt I (C) (Déchelette iii, fig. 227); the hexagonal form of the Haldensleben axe is matched on some British axes (Rosskeen mould) and suggests some North European influence in the British Isles, although most of the British examples are rectangular in section and have relatively narrow blades, particularly in the south. The decorated axe from Bergen auf Rügen, of Montelius V date, is close to this rectangular form (op cit).

In discussing these variant forms of the three-ribbed axe, the simplest type is of course the axe with more than three vertical

bars. Nearly a dozen of these are known from Scotland, scattered from Aberdeenshire to Dumfries and the Inner Hebrides. The number of ribs varies from four to seven, including some in false relief, and about half have wide recurved blades. They are in general only slight elaborations of the more normal three-ribbed axes, and their association with the latter at Meldreth, Cambs, dates them to the seventh century and contemporary with the Yorkshire and Welsh types (Inv. Arch. GB 13).

The more elaborately decorated ribbed axes require closer study. They can be divided into several typological groups, but all have in common vertical bars with pellets or rings, with two exceptions, one an axe with three pellets only similar in idea to south-east English axes (Evans 1881 fig. 122, 123), and one with three lines of incised Vs possibly related to the Winwick, Lancs, axe (Evans 1881 fig. 136). The main form of decorated axe, however, is a simple three-ribbed form with pellet or ring terminals; all of the Scottish examples (5) come from the central lowland area. An axe with only two bars, with pellets, also was found in this area, while a four-bar and pellet axe probably is from Perthshire. Of the same general form is a socketed axe from eastern Ross and Cromarty, with five bars and pellet terminals at their upper ends. Presumably the Borders axe with three pellets but no ribs, described above, is related to this Ross axe.

Comparable socketed axes are well known in England, generally in associations suggesting a date in the seventh century, with carp's tongue complex objects at Reach Fen, Cambs (Inv. Arch. GB 17) and bucket at Meldreth, Cambs (Inv. Arch. GB 13), and similarly dated objects at Somerleyton, Suffolk (Ant. J. VIII 1928 236), Eaton

Norfolk (PSA 2nd Series Xi 1885 42), and Late Urnfield objects at Feltwell Fen, Norfolk (Inv. Arch. GB 35). The Welsh associations suggest a somewhat later date, possibly in the early sixth century at Llyn Fawr and Cardiff (Grimes 1951, fig. 72 and 66). Similar axes occur in Ireland, but not in association (Hodges 1956 31); the occurrence of stone moulds for the type in Ireland and Scotland (Hodges 1954 78) should be noted, as presumably these were employed in the cire perdue process. A rib and pellet decorated axe in the Challans hoard is associated with carp's tongue complex objects (Gallia XV, iii, 1957, 78, pl 4), but few axes of this distinctive type are known farther east, and it appears that the development of the elaborately decorated axe, possibly based on a Central or North European form, occurred mainly in the West.

A slightly more evolved decoration is seen on an axe from the Poolewe, Ross, hoard. This has three vertical bars ending in pellets, but the central bar stops before reaching the mouth moulding, and a horizontal bar joins this point to the outer bars about $\frac{1}{4}$" below the moulding. This form recalls several socketed axes from southern England, one from the Thames (Evans 1881, fig. 140) and a more elaborate form from Kingston, Surrey (op cit, fig. 141, and fig. 131).

There remain nearly ten Scottish axes with more evolved and intricate decoration, which may be accounted a sub-group of the above. These involve vertical bars with rings or dot-and-circle decoration, or diagonal bars with ring-and-pellets, and combined vertical and diagonal bars with rings or dot-and-circle decoration. The distribution of these suggests some relationship with Ireland, although many examples are also known from southern England. In this regard it

match, but the motif recurs on some English axes (Evans 1881, figs. 143, 148, 149) and in Scandinavia (Broholm, DO iv 23, 24; Montelius 1922, 992, 993, 997). These seem to be related to Sprockhoff's Lausitzer group (Sprockhoff 1956; i, abb. 17, 15; Montelius 1922, 1057, 1062), and true V - decorated axes occur in Hungary and elsewhere in Central Europe (Aberg, 1936 XiV, 24-27; XVi 11, 21; XVii, 1, 2; Germania XXXii, 1954, p.7ff, taf 8, 10-11 mould).

The class as a whole seems to be related to western European types, the Scottish examples probably of Irish inspiration, but the basic decorative style may be Scandinavian. The Poolewe decorated axe was associated with a trumpet-ended ornament, generally dated from the seventh century B.C., and the extremely elaborate axe from Sompting, Sussex, dates to the early sixth century by its B2 cauldron and Hallstatt C phalera (Ant. J., XXVIII, 1948, 157).

FACETED AXES:

Socketed axes with faceted section may be divided into two separate groups, a homogeneous group composed of axes with trumpet or collared mouths, and a second group made up of all other faceted axes, generally with one or two mouldings at the mouth. The collared type usually has a slightly everted socket mouth and a collar extending down to the loop top, varying from $\frac{1}{2}$" to 1" in width, below which the body section descends in six, or, more commonly, eight facets to the wide and sometimes recurved blade.

The Scottish distribution of this collared type shows a marked concentration in the central and south-eastern regions (map 3). Only five axes occur north of the Glen Spean - Deeside line, and few in south-west Scotland. This distribution seems to point to a south-eastern centre of dispersal for the type, and this eliminates a source in Ireland, although the matter is in some doubt, and returned to below. The Tweed and its tributaries may have been utilized as a route leading to the interior, and the Firth of Tay also seems to have received a number of these axes. Possibly the finds near Loch Tay connect with this area. As stated, this distribution suggests a south-eastern origin, and little evidence exists to confirm Hodges' claim for an Irish source. Indeed, his statement that only two faceted axes of octagonal section occur in Scotland (1956, 29) needs revision, as thirty-one have now been recorded, and the type is not particularly common in Ireland.

Although collared and faceted axes occur in north-west Europe, they are not numerous and, as explained below, may reflect a movement from Britain to the continent, either introductory or reflex.

A bronze mould for an axe of this type from the Quantock Hills, Somerset (BM 1953 fig. 12, 5) is somewhat like one from Erkrath, Rhineland (Mariën, 1952, fig. 205), and Sprockhoff has listed other examples of faceted axes in Northern Europe, not all collared (1941, 88-89, abb 72, taf 40, 2-4, 6, 8), which seem to reflect British influence. A collared and faceted axe from Gurki, Poland, was found with objects dated to Montelius V (Auh. V iii 1881, abb 189). Other Continental faceted axes have ribs emphasizing their angles, as in the Meldreth, Cambs, hoard and other English finds (Inv. Arch. GB 13, 32); Court-Saint-Etienne, Belgium, shows this feature and has been dated to Hallstatt D (Inv. Arch. B 7), which seems somewhat at variance with other finds of Montelius IV (Sprockhoff 1937, taf 5, 17, p. 30; also see Breuil 1905, fig. 7, 92).

Sprockhoff considers that the faceted axe is a North German type, descended from the transitional palstave-axe as at Ratibor, Silesia, with its Thames River relation (1941, abb 73); if this is true, then the faceted idea reached Britain at an early stage, for the British type of faceted axe has either a double moulding or a collar, while the native German type concentrated on a single moulding, and British faceted axes are found in the North in Montelius V, a reflex movement. Indeed, the abundance of collared faceted axes in the Highland zone of Britain suggests that the later evolutionary trends were carried out here. The axes from Adabrock, Lewis, and Horsehope, Peebles, are clearly related to finds at Court-Saint-Etienne (Hallstatt D), and at Fjellerup Fyn (Montelius VI).

The alternate claim, for an Irish home of faceted socketed axes, although unsupported by distributions, requires some

examination. Hodges assigns the collared faceted axe to an early phase in the Irish Late Bronze Age because of the associations at Charleville, Co. Offaly (shield pattern palstave, socketed gouge and sickle), at Kish, Co. Wicklow (Class IIIA spearhead, Thorndon knife), and at Ballinlis, Co. Armagh (socket looped spearhead). Later associations are also known, as at Cromaghs, Co. Antrim (sunflower pin) and at Kilfeakla, Co. Tipperary (socketed gouge and sickle). While evidence could be presented to show that the types in these hoards need not be as early as claimed, nevertheless it appears that the faceted axe in Ireland appeared at least as early as, possibly earlier than, in other parts of Britain. This can be resolved with the Continental evidence by suggesting that the faceted axe arrived in Ireland and in south Britain from Northern Europe, probably in Montelius IV, possibly not until V, and the British type, with double moulding or collar, was developed quickly and was exported to the North in Montelius V, with the ribbed-angle type presumably a somewhat later export. Nevertheless, the east English distribution of the type is generally accepted, (Piggott 1953, 177), and the Scottish distribution scarcely allows of any Irish influence.

Collared and faceted axes are generally dated to the seventh or sixth century B.C., because of their associations with objects linked to the carp's tongue complex. At Stuntney Fen, Cambs, ribbed palstaves and axes suggest contemporaneity with this south-east English phase (Clark 1940, fig. 4, 4). Green End Road, Cambridge, has a ribbed axe, Class VB and VI spearheads, and a semi-tubular ring comparable to those from Monmore and Inshoch, with a faceted and collared axe, (PCAS XXXii 1932, 59-60). The hoard from Cumberlow

Green, Herts, links the type with objects of the carp's tongue complex, as does the Minster, Kent, find. Association with an Irish-British bucket at Bagmoor, Lincs, also suggests a seventh century date for the collared and faceted axe (Inv. Arch. GB 23). Associated finds in Wales illustrate the overlap of the type with Welsh ribbed axes, as at Fairwater, Cardiff, and other sites (Grimes, 1951, fig. 68, fig. 67), and Wick Park, Somerset, again links collared faceted axes with ribbed palstaves and axes, but also with objects suggestive of a date nearer the Wilburton-Guilsfield phase of the Late Bronze Age (Savory 1958, 37). The claim that the faceted axe lies behind the Welsh ribbed axe has previously been discussed.

In Scotland, socketed axes with collar and faceted section occur in a considerable number of hoards. The Kalemouth, Roxburghshire, and Essenside, Selkirkshire, hoards show the type with ribbed axes, as in the south. At Gillespie, Wigtonshire, a small hoard of three faceted axes shows some resemblance to the Achnahanaid, Skye, socketed axe, with the faceted section extending through the collar. Two of the Gillespie axes are identical, from the same mould. A faceted and collared axe at Traprain probably dates from the fifth century in view of the settlement's analogies with Lough Gara. The early 19th century hoard found at Gospertie, Fife, contained a collared and faceted axe, now lost, associated with a looped palstave and Class V spearhead (Small 1823). A socketed axe in the National Museum may have been a part of this large hoard; it is rectangular-sectioned with double moulding, clearly an English type, as seen in many hoards, mainly dated to the seventh or sixth centuries (Inv. Arch. GB 17, 11; GB 23, 15).

The faceted axe from Achnahanaid, Skye, is associated with a socketed gouge duplicated in the Wester Ord, Ross, hoard where it is dated to c 700 B.C. on the basis of Covesea objects. Another axe, from Cullerne, Morayshire, is similarly dated to the seventh century and connected to the west coast; spearheads from Cullerne and from the Point of Sleat, Skye, hoard come from the same mould, and their curved knives also suggest a close connection, another example of which belongs to the Wester Ord hoard. As the Sleat cup-head pin is presumably Irish, the Cullerne faceted and collared axe may also be derived from this source, but not certainly. The Cullerne bifid razor recalls the razors from Bowerhouses, East Lothian, which also are associated with a faceted axe.

Covesea-type armlets are linked to this socketed axe type at Rehill, Aberdeenshire, and date to Scottish LBA3, from 700 B.C., as do the axes from Monmore, Perthshire. The associations here include a semi-tubular ring as in the Nottingham hoard, and a ribbed tanged knife as at Heathery Burn. The collared and faceted axe in the Ballimore, Argyll, hoard may be of Irish derivation in view of the associations of bag and oval-sectioned axes. At Horsehope, Peebles, another of these faceted axes occurs with a ribbed axe and cart and harness mountings, dated by Piggott to Hallstatt C, probably in the late 7th Century.

The collared axe is the only distinctive type of the faceted axes in Scotland, but several sub-types may be distinguished among the non-collared axes. These are primarily found in east-central Scotland, but occur sparsely in the west from Galloway to Lewis. A small séries of these is composed of elongated axes, rather longer in

relation to their width than the ordinary type. This sub-type appears to be a north and western facies (Islay, NMA DQ 47; Skye, DQ 301; Adabrock, Lewis, DQ 211; Wester Ord, Ross, DQ 267; Golspie, Suth, Dunrobin Castle; Orkney, Hunterian Museum A94), with a small group in the central region (Traprain, East Lothian, NMA 1922, 232-231; Castlehill, Angus, DQ 79; Bell's Mill, Edinburgh, DE 18). A type unique in Scotland comes from Islay (DE, 97), with slight beadings or ribbings that emphasize the facet angles. It is matched by an axe from the Meldreth, Cambs, hoard dated to the seventh century by an Irish-British bucket and wing-decorated axes (Inv. Arch. GB 13).

A faceted axe from Arthur's Seat, Edinburgh, has a triple moulding running through the loop; this decorative idea is repeated on a Perthshire axe (DE 89) possibly inspired by axes of similar style seen in Central Sweden in Montelius V - VI. At least one axe of this type was imported into Scotland (see below). The axe from Arthur's Seat is associated with an English-type axe, generally dated to the seventh or sixth century B.C. (Inv. Arch. GB 38, 12).

Most of these Scottish faceted axes are octagonally-sectioned, a few hexagonally-sectioned, but one from Husabost House, Skye (DQ 301) is decagonal and has a wide recurved blade, generally considered to be a western trait. Its associated axe is matched in the Worthing, Sussex, hoard (Inv. Arch. GB 37, 28) of seventh century date. A twelve-sided socketed axe from Traprain Law, East Lothian, has three raised mouldings encircling the neck below a flat collar and is duplicated, in all but the width of blade, in the Castlehill, Angus, hoard; none of the associated objects need suggest a date for these axes earlier than the fifth century. A second axe from Traprain is

closely comparable with a faceted axe, with low moulding, from Orkney (Huntarian Museum A94).

The Wester Ord, Ross, hoard contains a faceted axe dated to c 700 B.C. by its association with Covesea objects; this axe is similar to one in the Adabrock, Lewis, hoard where the accompanying cross-handled bowl of Hallstatt C type may be dated to the late seventh century. A loopless faceted axe in the Bell's Mill, Edinburgh, hoard is matched in the Carlton Rode, Norfolk, find, and thereby dated to the seventh century; another axe of this type was found in London with a winged axe, also of the seventh century (Ant J. XIII, 1933, 297). A second faceted axe from Bell's Mill has an angular-sided blade, possibly matched on an axe from Wigtownshire. The Dalduff, Ayrshire, hoard provides a similar seventh century date for its faceted axe, based on an A2 cauldron, and possibly the same period, Scottish LBA3, applies to the Forfar and Inshoch, Nairn, axes. The latter is associated with a semi-tubular ring, also seen in the Monmore, Perthshire, and Nottingham hoards. These two hoards are connected to Heathery Burn by their ribbed tanged knives, and to the carp's tongue complex (Clark 1940) by distribution.

AXES WITH RECTANGULAR SECTION:

Scottish socketed axes with rectangular or sub-rectangular section fall readily into two classes - those of English type and the more common local renderings of the rectangular-sectioned type. The English type has a double moulding, one at the socket mouth, the other slightly below and which runs into the loop top either imperceptibly or abruptly. The body section may vary, in the Scottish examples, from sharply rectangular to a somewhat curved sub-rectangular effect. Blades also have considerable scope and may be narrow and straight as in many English axes, or may be wider or recurved. This latter feature is also often seen on English axes, but generally is limited to a sudden widening of the blade, while the Irish style of recurved blade gradually expands from a point at least midway up the axe.

The second class of Scottish rectangular-sectioned axes includes all those examples that lack the distinctive double moulding of the English type, with the exception of ribbed axes and small squat axes which fall into separate classifications.

The distribution of the truly English form is primarily central and eastern, with few examples north of Strathmore (Map 4). The second class is generally found in the east as well, but extends northwards as far as Sutherland. Finds along Tweeddale and Clydesdale may show some east-west connection, but there is a noticeable absence of the type in the South-west. In the north, a second area around the Cromarty Firth, and extending across to the north-west, shows some preference for this form. The few finds in the Aberdeenshire area have narrow blades, while the north-western group all, with one

exception, have wide or recurved blades; this appears to be another example of regional differentiation such as has already emerged in the study of faceted axes (see also Savory, 1958, 39-40).

The double moulding socketed axe is so common in English hoards that there is no need to look farther afield for the immediate source of the Scottish examples. In England most of these hoards are dated to the seventh or sixth century because of their objects of the carp's tongue complex or their Irish-British buckets. At Worthing, Essex, the English socketed axe occurs with a winged axe (Inv. Arch. GB 37), at Reach Fen, Cambs, with bag chape (GB 17). Bagmoor, Lincs, shows a bucket base-plate (GB 23), and Stuntney Fen, Cambs, contains ribbed palstaves and axes, all with English-type axes.

It is possible to connect, typologically, the Hademarschen or Taunton type of socketed axe with this later class of rectangular-sectioned axe. The Taunton type reached Britain from the Elbe-Oder region in the earliest stage of the British Late Bronze Age, and was adopted here first as copies of the original form, as at Kingoldrum, Angus, and then in more elaborate forms, the principal changes being an increase in size, as at North Berwick Law, and then the addition of a second smaller moulding below the mouth. This double moulding style occurs on several distinct classes of axes in addition to the distinctive English type under review, such as on Yorkshire ribbed axes, and it seems clear that this Yorkshire axe may have had its origin in the application of ribs, as seen on Northern axes of Montelius IV, to the English rectangular axe. The double moulding style is rare in Northern Europe, and is generally believed to be British (Tackenberg 1951). Exports of the type to the North appear

in Montelius IV and V contexts, at Lovskal, Denmark, in the earlier period (Broholm DB 111 M 84), and at Plestlin, Kr Demmin at a later date (Sprockhoff 1941, taf 42, 10 with pattern, taf 44, 2-3 with pellet). In Central Europe a date in Hallstatt B applies to the Hochstadt, Kr Hanau find (Müller-Karpe 1948, taf 34, 4; see also Sprockhoff 1941, taf 39, 4; P.Z. vii 1915 74).

Several hoards in Scotland contain axes of this English type. One from Arthur's Seat, Edinburgh, is almost exactly matched by an axe from the Bagmoor, Lincs, hoard. (Inv. Arch. GB 23, 16), and is itself associated with a faceted axe which recalls a socketed axe from the Forest of Birse, Aberdeenshire; this last-named appears to be an import from Scandinavia of Montelius V or VI. A single find from Strathmore, is unique in Scotland in that the faces of the axe are decorated with short vertical punched lines. This motif is more commonly seen on flat axes of the earlier Bronze Age, as at Colleonard, Banffshire (Inv. Arch. GB 29, 1-3).

The only surviving object from the Gospertie, Fife, hoard is a socketed axe of this double moulding English type, and apparently was associated with a faceted and collared axe. One of the socketed axes from the Castlehill, Angus, hoard is matched in the Worthing, Sussex, hoard which is dated to the seventh century B.C.; however, the identical faceted axes at Castlehill and Traprain Law suggest that this Angus hoard dates from the fifth century. A lunate spearhead is associated with an English-type axe at Highfield, Ross, and a similar date, from c700 B.C., applies to the rectangular axe from the Auchtertyre, Morayshire, hoard with its Covesea armlets. The recent additions to the Dalduff, Ayrshire, hoard include three axes of this

type as well as a ribbed axe. If these are truly associated with the original members of the hoard, the A2 cauldron dates the types to the early seventh century.

The commoner Scottish types of rectangular-sectioned axe are, as described, scattered over much of Scotland, except in the south-west where probably the oval-sectioned and bag axes were more favoured. The type represents only slight variations from the English axe with double mouldings, and is commonly seen in southern hoards. The Worthing, Sussex, hoard contains an axe closely comparable to a single find from East Lothian (Inv. Arch. GB 37, 31; NMA DE 91), and a socketed axe from Annan, Dumfries, is matched in the Shoebury, Essex, hoard (NMA DE 77; Inv. Arch. GB 38, 26); both hoards are dated to the seventh century.

A single find from Perthshire (DE 89) has three mouldings encircling the socket and passing through the loop. This idea is paralelled in Scandinavian axes, dating from Montelius IV to VI (Montelius 1922, 1054-55). Several Scottish axes are related to the type, which also appears in Ireland (see Imported Axes). A loopless axe, also of sub-rectangular section, from Banffshire, may be an off-shoot of an imported loopless axe found in Angus and dating to Montelius VI. This Banffshire axe is closely matched in its style of workmanship by an Aberdeenshire axe (Banff Museum; Marischal College).

The more normal rectangular-sectioned axes can be divided into two groups, those with a collar at the socket mouth, and those with a plain moulding only. The latter type occurs in several Scottish hoards, at Wester Ord, Ross, where it is dated to c700 B.C. by its associated necklet, and at Poolewe, Ross, where the trumpet-ended

ornament in general may be equated with Montelius V and the later phase of the Irish Late Bronze Age, from the seventh century. The dating of the type at Essenside, Selkirkshire, and Highfield, Ross, is not as precise.

The collared axes of this group also occur in the south of England and in Wales, in associations with objects such as ribbed axes, at Stuntney Fen, Cambs., and Llanddewi-rhydderch, Monmouth, (Grimes 1951, fig. 67, 8-9), and bucket at Meldreth, Cambs (Inv. Arch. GB 13, 27), all suggestive of a seventh century date. Scottish associations for collared axes of this group include evolved faceted axes at Husabost House, Skye, and Castlehill, Angus. The collared axe from the former hoard is closely matched by one in the Worthing, Sussex, hoard (Inv. Arch. GB 37, 28) with its seventh century associations. The Castlehill find is considered to be hardly earlier than fifth century B.C. in view of its similarity with Traprain Law objects. The collared axes from Adabrock, Lewis, are repeated in the Meldreth, Cambs, hoard and at Feltwell Fen, Norfolk (Inv. Arch. GB 13, 28-31; GB 35, 1) both of the seventh century. The associations at Adabrock, including a Hallstatt C bronze bowl, suggest a date nearer the sixth century, possibly late seventh.

BAG-SHAPED AND OVAL AXES:

The commonest form of bag-shaped axe has a relatively short body and a wide often recurved blade. The socket mouth is usually oval, as is the body section in its purest form. Many Scottish axes belong to this type, and others create an impression that they are bag axes by their width of blade, but for reasons stated below it has been found useful to set a certain limit based on the average variation in true Irish bag axes. This simple determination eliminates the non-bag-shaped axes from the established type. For this purpose, measurement of blade width over axe length produces, for typical bag axes, an index never under .71, while a considerable number of pseudo-bag types fall in the range .66 - .70; these are not true bag axes but belong to a related group.

The ordinary bag-shaped axe has a slightly expanded mouth producing a trumpet-like appearance to the axe. Other forms, less common in Scotland, include single mouldings at the mouth, or double mouldings or a collared effect. A few show multiple mouldings at or below the mouth. A second type of bag axe, clearly related by the same basic principles of shape, is that with a body section not oval but sub-rectangular or, more generally, hexagonal or octagonal. The same varieties of moulding at the socket mouth occur, but the single trumpet-like appearance or single moulding form is much commoner than the multiple moulding type.

The socketed axe with oval section, but falling outside the limiting figure of true bag axes, is undoubtedly related to this latter type, either through local development of the bag-shaped idea or through the receipt of Irish oval-sectioned axes. The distribution

of this type suggests that Ireland played a considerable part in the establishment of this form in Scotland. The axe generally has a wide or even recurved blade, and the socket mouth may have a single or double moulding, or a collar or multiple mouldings of unequal widths.

A further type of Scottish socketed axe is clearly related to Irish diminutive axes, but falls outside the range of true bag axes. This is due to their lack of wide or recurved blades. In section these may be oval, sub-rectangular or faceted, and the decoration at socket mouth also varies from a single moulding or collar to multiple mouldings. The distinctive features are the small size of axe, rarely over 2½" long, and the narrowness of the blade.

Map 5 shows the distribution of the Scottish bag axes and their related types. The overall distribution shows a considerable number of finds from the east coast, particularly in the Aberdeenshire area. This need not disrupt the suggested Irish connections, because it is commonly accepted that the most suitable settlement areas lie mainly in the east and types of implements in common use will naturally gravitate in the direction. Nevertheless, the rarity of bag axes and their derivatives in the north-west of Scotland is unusual. In the south-west, a number of finds have been made, not however as many as would be normally expected.

The true bag-shaped axe is clearly an Irish type. The map of Irish finds shows the concentration in that island, and comparison with the rest of the British Isles confirms the above opinion (Hodges, 1956, fig. 7). The Scottish distribution as seen on Map 5 shows little resemblance to Hodges' Scottish map, but the definition of the true bag-shaped axe as explained above, based

upon the Irish form, eliminates several of Hodges' find spots and alters the general pattern of distribution in Scotland. This is to a certain extent also due to the plotting of a considerable number of bag axes hitherto unrecorded. The Scottish map suggests that the bag axe arrived here not through Galloway but via the Clyde area, possibly spreading thence through the Central Lowlands along the Vale of Kelvin eastwards into the Lothians or northward to the Teith. From here, Strathallan and Strathmore are easily accessible, and may duplicate the route whereby Irish kite-bladed spearheads penetrated into Central Scotland.

A small group of bag axes lies in the Garioch-Strathdon area, and may possibly represent influence from Strathmore, or may be an offshoot from a considerable concentration in the Laich of Moray. This area must have received these Irish or Irish-inspired axes via the Great Glen, which route was already known in the earlier Bronze Age (Inv. Arch. GB 29, Colleonard, Banffshire). Of interest is the extreme scarcity of the bag axe in the Western Isles and the poor representation in Galloway. The concentration of oval-sectioned axes in the central Ayrshire plain partially compensates for this near-absence of true bag axes.

The ordinary Irish bag axe has both oval mouth and section. In Scotland a number of bag axes have sub-rectangular body-sections, and it is suggested that these represent a local development of the bag axe idea, the sub-rectangular form resulting from contact with the English type of socketed axe, which has a rectangular body. Hodges states that a few Irish bag axes have hexagonal-sectioned bodies below a collar or trumpet mouth. These may represent, as he suggests,

the origin of the bag axe in hexagonal-sectioned axes in Ireland, but seem to be entirely different from the Scottish bag axes with sub-rectangular section.

The distribution of these two Scottish types of bag axe, the true oval-sectioned Irish form, and the Scottish sub-rectangular form, shows an interesting geographical limit for the spread of the pure Irish form. Of approximately forty bag axes with sufficiently precise provenance known, the two ports of entry for bag axes from Ireland, the Clyde and, to a lesser degree, Galloway, show eight pure forms to one what we may call secondary form. The intermediate area leading to the Lothians and Strathmore yields three pure and no secondary forms. The picture presented by eastern Scottish finds is entirely different, with only six pure forms to thirteen secondaries, another example of regional differentiation. Compared with the western areas, it appears that the Irish oval-sectioned bag axe underwent a change in the eastern area probably due to contact with the basically different English type of socketed axe. The axes from the Moray coast do not show the same degree of emancipation, with five Irish and three Scottish forms, and this serves to support the assumption of the use of the Great Glen route, rather than a derivation from the Aberdeenshire area.

The distribution of the oval-sectioned socketed axe, (not of the bag-shaped group) is somewhat different than that of the true bag axe in Scotland. The most striking feature of this distribution is that the western area of Scotland shows more of these axes than the east, whereas the total number of socketed axes from the east is approximately double that of the west. These oval-sectioned axes are mainly found in the south-west, from Galloway to the Carrick and Kyle

areas of the Ayrshire plain, and possibly represent direct contact with Ireland. A few finds in Tweeddale might represent the culminating point of a riverine passage from the Heads of Ayr along the Ayr, Douglas or Duncaton Water into the Tweed, and this passage might also account for the few finds of three-ribbed axes in Carrick.

As described, the normal form of this axe shows an oval-sectioned body with wide or recurved blade. This type is common in Ireland where it merges into the true bag axe in many cases, and there seems little need to look farther afield for a source of the Scottish axes. However, a number of oval-sectioned Scottish axes are atypical of the group, either by their slender body or by their narrow blades, mainly the former feature. Of oval-sectioned axes in east Scotland, all are of this atypical group, none are clearly of Irish type, while in the west of Scotland, most are close in form to the Irish oval axe, which incidentally is found mainly in central and north-eastern Ireland.

The third main type of Irish-inspired axe is the small squat variety, based on the diminutive Irish axe as described. This type is relatively rare in Scotland although a small number occur in the Garioch and Formartine area of Aberdeenshire. Galloway has not revealed any axes of this type, which is rather surprising in view of the suggested Irish origin (Hodges, 1956, 31). The Irish axes are generally smaller, usually under 2" in length, but otherwise they exhibit the same characteristics as the Scottish axes (Evans, 1881, fig. 170). The somewhat complementary distributions of bag axes, oval-sectioned axes, and small squat axes in southern Scotland should be noted.

While the immediate source of the Scottish bag-shaped, oval, and small squat axes clearly lies in Ireland, the ultimate origin

of the smaller types is uncertain. Hodges claims that the hexagonal-sectioned axe as found in Ireland gradually developed into the bag-shaped axe, and cites several transitional forms, a bag axe with faceting below the neck. However, these rare axes could equally as well be hybrid forms, and associations are lacking (Hodges, 1956, 31). But he also describes a hatchet-shaped axe which is claimed to have descended from the bag-shaped axe in view of its over-expanded blade and general squat appearance (1956, 33, fig. 1, 4).

In Scandinavia, however, there occur several axe forms that can equally as well be considered the prototype not only of these hatchet-shaped axes, as Hodges admits, but also of the bag axe itself (Montelius 1922, fig. 1177, 1178; Broholm DO iv, 134). These are dated to Montelius IV or V, and may well have influenced the production of a smaller more squat axe in the later phases of the Irish Late Bronze Age. A somewhat similar form also appears in Montelius IV, which may be related to the smaller socketed axes in Ireland and Scotland (Montelius 1922, fig. 1173), although its juncture of loop top and socket mouth, a common Continental feature, differs from the British and Irish type. A diminution in size is also a regular practice in objects of this Montelius IV (Montelius 1922, figs. 1058, 1060-61, 1063), and the small axes in the Bergen auf Rügen hoard illustrate the persistence of this feature (Sprockhoff, 1941, taf 53, 4-5).

In Ireland several hoards suggest a date for the bag-shaped axe somewhat earlier than the initial date of 650 B.C. proposed by Hodges on the basis of distributional studies (1956, 45-46). At Dowris, both bag axes and oval-sectioned axes, if truly associated with a Kurd-Eimer and B4 cauldrons, should date scarcely later than 650 B.C.

(Hawkes 1957). The association of a basal-looped spearhead with a bag axe at Kish, Co. Wicklow, supports this appearance at an early date in the Irish Late Bronze Age (Doyle, 1940, 94). Other hoards are suggestive of a later date for the bag and oval-sectioned axe, as at Kinnegoe Bog, Co. Armagh (Armstrong 1921-24, 148) and Glenstal, Co. Limerick (ibid 146-147).

The Stuntney Fen, Cambs, hoard contains a number of bag and oval-sectioned socketed axes, as well as several small squat axes comparable to the Scottish type (Clark 1940 pl VI). The associated ribbed axes and palstave suggest a date from the seventh century B.C. in the south of England. One of the Stuntney axes resembles closely a small squat example from Aberdeenshire (op cit, pl VI, sixth from left in bottom row; Marischal College, 254).

The oval-sectioned socketed axe is not particularly rare in the south of England, as are the true bag axe and small squat axe, and generally is dated from the seventh century B.C., either by associations with carp's tongue objects as at Felixstowe, Suffolk (Inv. Arch. GB 16, 6) and Worthing, Sussex (GB 37, 28), or by association with an Irish-British bucket at Meldreth, Cambs (GB 13, 30). This Meldreth axe is closely matched by several collared Scottish axes (Strathgray, Perthshire, Blair Castle Museum; Penninghame, Wigtownshire, NMA DE 48). An axe from the Nottingham hoard also may be compared, and the associated objects of semi-tubular ring and ribbed tanged knife are duplicated in the Monmore, Perthshire, hoard.

Socketed axes of the small squat type are rarely seen in the south, but several have been found in hoards, as at Stuntney Fen, Cambs, and the Isle of Harty, Kent, where the carp's tongue objects

suggest a date from the seventh century B.C. (Inv. Arch. GB 18, 19). The axe in question, however, lacks the squatness usually seen in Scottish examples, which occurs in a ribbed axe from the Newark, Notts, hoard, of similar date (GB 36).

Bag-shaped axes and derivative or related forms are not common in Wales (Hodges 1956, fig. 7; Savory 1958), but several associated finds are recorded. Both Llantwit Major, Glam., and Llanddewi-rhydderch, Monmouth, contain bag-shaped axes and ribbed Welsh axes, the former hoard also with a ribbed palstave of Clark's Class I (Grimes 1951, 257, 255), and a small squat axe as well. The Guilsfield, Montgomeryshire, hoard contains a bag-shaped axe and the associations generally suggest a date earlier than the seventh century, possibly as early as c 900 B.C. Welsh-type axes at St. Arvans, Monmouth., are associated with an oval-sectioned axe which recalls one from Melrose, Roxburgh, and date from the seventh century (Grimes 1951, fig. 67, 1; NMA DE 65).

Bag-shaped axes are found in several Scottish hoards, none of which can be dated without question to a time earlier than Scottish LBA3, from 700 B.C. The hoards from Ballimore, Argyll, and Highfield, Ross., both contain bag axes in association with lunate spearheads, but this type is generally dated not earlier than the seventh century in Scotland, although it does occur in an earlier context in the south of England. The bag-shaped axe recently added to the Dalduff, Ayrshire, hoard is assigned to the early seventh century by its accompanying A2 cauldron handles, and a somewhat similar date probably applies to the Inshoch, Nairn, bag-shaped axe with its connection to the Monmore, Perthshire, and Nottingham hoards through

their common semi-tubular rings. The associations of Type 1 socketed gouge at Tynehead, Midlothian, and English-type axe at Leith, with bag axes are not chronologically diagnostic. However, a bag-shaped axe from the Castlehill, Angus, is considered to date hardly before the fifth century B.C. in view of the hoard's analogy with Traprain Law.

Socketed axes with oval section are also found in several Scottish hoards, including the Ballimore, Argyll, and Dalduff, Ayrshire, hoards noted above. At Islay, the possible founder's hoard contains a Class IV spearhead and a halberd, among other objects, and although the axe in question is atypical, an early date in the Scottish Late Bronze Age may be tentatively suggested. The Essenside, Selkirk, hoard contains an oval-sectioned axe as well as a Yorkshire-type ribbed axe. The fragmentary axe in the Balmashanner, Angus, probably belongs to this Scottish group, and is dated to the seventh century or later by its associated Covesea armlet and cast bronze bowl. A later date applies to the atypical socketed axe attributed to the Grosvenor Crescent, Edinburgh, hoard, which dates from c 500 B.C. by its swan's neck sunflower pin.

A single find from Cambusmore, Sutherland, has a herring-bone pattern round the expanded mouth; this decoration of chevrons is commonly applied to axes of the earlier Bronze Age, as at Gavel Moss, Renfrewshire (Inv. Arch. GB 28, 3), and on a flat axe from Nairnshire. The rope moulding seen on a small socketed axe from the Tay appears to be an Irish feature, and has been recorded on several finds from Portora, River Erne (Hodges 1957b, fig. 1, 4), Athboy, Co. Meath (Evans 1881, fig. 172), and, in a slightly different form, from Beaumaris, Anglesey (Grimes 1951, fig. 64, 12).

The only associated find from Scotland, or Ireland, containing a small squat axe is that from Callander, Perthshire, but the accompanying rapiers and Class IV spearhead suggest that the axe type had its origin at an earlier stage of the Late Bronze Age than previously believed. Possibly the Scandinavian comparable axes of Montelius IV can explain this Scottish IBA dating, but it must be noted that the associated nature of this find is not fully substantiated.

IMPORTED AXES:

None of the Scottish socketed axes that appear to be imports, or direct copies of continental axes, has been found in association with other distinctive bronzes. An axe from Carse Loch, Kirkcudbright, (NMA DE 5) is a Scandinavian form appearing there in Montelius IV (Broholm DB IV, pl 5, 4; DO IV, fig. 22, p 63); its significance in connection with the evolution of British ribbed axes has been discussed. Another socketed axe from the same area, Annan, Dumfries, (NMA DE 80) is of Taunton-Hademarschen type, and dates to Montelius III or IV (Sprockhoff 1941, taf 39, 3; taf 59, 3; map 113); it may be a direct import if of Hademarschen type, or a representative of the British Taunton type. The Kingoldrum, Angus, socketed axe (NMA DE 12) has a slight scarcely perceptible collar and is sufficiently close to the Taunton type to be considered a copy at least of these axes of the TBB group.

This type is rare in Ireland, where it occurs in the Bishopsland hoard, but is more common in the Somerset area of England. The British distribution is shown by Hodges (1956 32), and Savory lists another example from Merioneth, Wales, somewhat atypical (1958 17-18, map 59). An unprovenanced axe in the National Museum, Dublin, appears to be a local rendering of the Taunton type, the wider blade suggesting some Irish influence. An axe from North Berwick Law, East Lothian, (NMA DE 91) seems to be derived from this Taunton type.

A socketed axe from the Forest of Birse, Aberdeenshire, (NMA DE 13) may be an import from Scandinavia; if not, it is certainly a close copy of a type appearing in Central Sweden in Montelius IV (Montelius 1922, 1054), and in Denmark in later periods (Broholm DO IV,

fig. 217; Broholm DB iv, 249). An axe from Perthshire (NMA DE 89) appears to be a local rendering of this Scandinavian form, with three mouldings passing through the loop. A faceted axe from Arthur's Seat, Edinburgh, (NMA DQ 89) shows other connections with a North German type, with multiple mouldings around the socket mouth (Sprockhoff 1941, taf 38, 10, map abb 67). The Northern type has a loop springing from the socket mouth moulding, below which a collar effect of two small - one large - two small ribs provides the distinctive feature of the axe, which is found primarily in north Netherlands and western Germany. It occurs in the hoards of Plestlin and Vietkow, both dated to Montelius V (Sprockhoff 1956, i, 51, 66).

Sprockhoff considers the Dungiven, Co. Derry, axe as related to this type (1941, abb 68), and other Irish finds include Ballinderry, Co. Westmeath, (JRSAI 83 1953 103 ff), Cromaghs, Co. Antrim, (PRIA 26c 1916 119ff), and Belfast, (Arch 61, 1908 153), linking this form of axe to objects such as gouges, sunflower pins and gold dress-fasteners. A somewhat similar form appears in the Minnis Bay, Kent, hoard with objects dated to the seventh century (Worsfold, 1943, pl xi, 3). Several Scottish axes may represent local renderings of the type, and are concentrated in the south-west, thus connecting with the Irish axes rather than directly with the Northern form, although Northern influence seems to be disseminated from the Irish Sea coasts. The socketed axes from Muirhead and Low Overmoor, Ayrshire (NMA DE 113 and Kilmarnock Museum), from Old Monkland, Lanarkshire (atypical, NMA DE 87), and from Islay (NMA DE 119), all possess the multiple mouldings of unequal width characteristic of the Irish form. The axe from Arthur's Seat, noted above, is now connected with an English-type socketed axe

rather than with the two native swords previously reported.

A loopless socketed axe probably from Angus (Montrose Museum) appears to be an import, or else a close copy, of a Scandinavian or North German form dated to Montelius VI (Aberg 1936, taf X, 115; Sprockhoff, 1931, taf 23, 4; Mestorf 1885, taf XXI, 209 with loop).

Three axes reputedly from Lamancha, Peeblesshire, compose a hoard of North French types, with long narrow square-sectioned bodies and heavy mouth moulding. The distribution of the type gives no hint of the reason why such exotic objects should be found in Scotland (Sprockhoff 1941, abb 89); however, similar socketed axes have been found in Ireland, correcting Hodges (1956, 48), and one, probably from Co. Antrim, appears to be a local production with casting flaws and untrimmed seams (Belfast Museum). The possibility that such axes were employed as currency bars should be noted.

SPEARHEADS

CLASS III:

The basis for discussion of socketed spearheads lies in Greenwell and Brewis' article in Archaeologia 1909 (vol. lxi 439), and their classes of weapons are so uniformly known that it seems unwise to attempt new typological definitions. However care must be taken to ensure that the numerical system employed does not mislead or influence the discussion of typological development.

Typologically the earliest class of spearhead found in any quantity in Scotland is Greenwell and Brewis' Class III, but mention may perhaps be made of the few finds of earlier types. The tanged spearheads from Fife and Ayrshire both belong to groove-decorated Class I, the former weapon also having a midrib decorated with a punched-dot design. These are comparable to English tanged spearheads and date to the Early Bronze Age (Evans 1881, fig. 325; Fox 1948 54 pl VI, fig. 11; Inv. Arch. GB 9, 20, with references).

A Class II spearhead, of Arreton Down type, may be part of the Greyfriars Church, Dumfries, hoard, in possible association with palstaves. The objects in question are at present lost to public view, although some casts exist, and the association itself is in doubt.

As stated above, Class III spearheads compose the first major group in Scotland. These are best distinguished by their kite-shaped blade derived from the earlier tanged spearheads and ultimately from similarly-shaped daggers of the Early Bronze Age. The Scottish spearheads of this Class III are generally about 5-6 inches in length, although larger examples are not rare, and have the characteristic

British and Irish looped socket. Their lozenge-flattened loops are, on the average, slightly nearer to the socket mouth than to the base of the blade.

Three distinct types of Class III spearheads may be distinguished, the major consisting of those spearheads with ribs on the wings nearly parallel to the edges of the blade. A smaller number show a blade less kite-shaped and without ribs, approaching the leaf-shaped form, while a third type is made up of the so-called javelin heads. These may be decorated, but are characterized by their thickened blade with shallow grooves, producing a multi-angular section.

Raftery divides the Irish Class III spearheads into two groups, the javelin head with short socket, and the ordinary spearhead (1941, 289). He suggests that the former type has its origin in daggers, the latter in polished flint lance-heads. No significant distributional pattern occurs to enable us to differentiate geographically between these variants.

The Scottish distribution is too sparse to allow any concrete proposals to be made regarding their source (map 6). However, when this is seen in conjunction with the distribution of Class III spearheads in Ireland (Raftery 1941, 291), and considering the known relative rarity of the class in England and Wales, it is clear that the Scottish examples must be derived from Ireland. Raftery notes over 150 finds and Coffey estimates a total number of 350. The Scottish distribution is remarkable in that no finds from the south-west have been recorded, but the Clyde and Annan may have been employed as routes leading to the interior and to the fertile lowlands of the east. Caithness and Shetland should be noted as recipients of this class of

spearhead.

Divergent views are expressed regarding the date of these Class III spearheads in Ireland, and a brief summary of these may be useful before discussing the single associated find in Scotland. Raftery claims a Late Bronze Age date, stating that "a great majority of the group must be relegated to the period about 800 B.C." (1941, 287-298), and reaffirmed this late dating in 1951. His assumption that the socket idea did not reach Britain or Ireland until the beginning of the Late Bronze Age is no longer tenable, and it is now recognized that this feature arrived from the continent by c 1500 B.C., the socketing idea being attempted first in the production of the Arreton Down type of spearhead. Cowen shows that basal-looped spearheads of British manufacture were exported to the continent by Montelius II (1948, 233).

It seems clear that the socket, as applied to spearheads, arrived in Ireland well before the beginning of the Irish Late Bronze Age, and was adopted by smiths who invented loops to aid the hafting of the as-yet short socket. Hodges notes that all the moulds for Class III spearheads are of stone, and considers this as an essentially Middle Bronze Age technique (1954, 62).

Evans dismisses Raftery's claim for a Late Bronze Age date but however states that, while Hawkes has placed Class III spearheads in his Bronze Group C, c 1400-1300 B.C., in remoter parts of Britain the type may have been manufactured and used later, even to the end of the Middle Bronze Age (1954, 57). The few associations noted below show that this suggestion is unduly cautious, and that the type does persist into the Late Bronze Age in the northern parts of Britain, and in Ireland.

At Ballinlis, Co. Armagh, a collared and faceted axe is

associated with a kite-bladed spearhead, and the hoard thus clearly dates to the Late Bronze Age (JRSAI, lxx, 1940, 94). In the Netherlands at Vledder, Prov. Drenthe, a similar spearhead occurs with a cremation in an urnfield dated to Hallstatt A (van Giffen, 1938, 331). The Class III spearhead from Corsbie Moss, Berwickshire, the only associated find of the type in Scotland, supports a date in the Late Bronze Age, at least in the Highland Zone. The associations here are a sword of Wilburton type and a bronze chape, the latter destroyed upon discovery, but the spearhead must date to Scottish LBA2, from c 900 B.C.

An enigmatical spearhead from Ettrick Forest, Selkirkshire, also suggests a Late Bronze Age date for some kite-bladed spearheads. This example has high ridges running more or less parallel to the blade edges, and two lunate openings in the blade. The lunate spearhead is not dated in Scotland earlier than LBA3, from c 700 B.C. Possibly the Ettrick spearhead can be considered as an atypical Class IV example, with somewhat angular blade and lozenge-shaped loops, but lunate openings are equally as rare on this later class as on the Class III spearheads.

A javelin head from Islay was reputedly found with other bronze objects but these are now untraceable. Two other javelin heads are decorated with groups of lines circling the socket above and below the loops, and at the blade base. One, from Douglas, Lanarkshire, is limited to this, but the other, from Dean Water, Angus, has in addition a series of dotted lines on socket and blade. This decoration is matched on a spearhead from Ballymena, Ireland (Evans, 1881, fig. 401).

CLASS IV:

The Class IV spearhead is distinguished by its hybrid nature, a reaction of native bronze smiths to the incoming leaf-bladed spearhead. The native kite-bladed and looped spearheads of Class III were combined with the intrusive leaf-bladed and riveted spearheads of Class V to produce a leaf-bladed and looped spearhead (Class IV), that supplanted Class III and probably ran parallel to Class V until its manufacture was discontinued by the realization that the rivet method of attachment was superior to hafting by the use of loops. Apparently the leaf-shaped blade appealed at once to the native smiths, yet it is strange that no kite-bladed and riveted spearheads were manufactured in the first flush of enthusiasm.

The Class IV spearhead, then, is a form developed soon after the arrival in Britain and Ireland of the leaf-bladed spearheads with rivet holes. Cowen, discussing the Liesbüttel grave group, shows how the basal-looped spearhead, a British type, dates on the continent to Montelius II. Now this type of spearhead is generally believed to be a development from the Class IV spearhead, the only difference being that the loops set free on the socket in the latter class have moved up to the base of the blade in the former class.

This on the surface seems reasonable, but a further difference that has not been emphasized is apparent from a comparison of the sizes of these two spearhead types. Both Class IIIA (basal-looped) and the related IVB (protected-looped) exhibit lengths far exceeding that of the uniformly small Class IV spearheads. Arguments based on the greater amount of metal available in later stages of the Bronze Age are scarcely applicable here, in view of the diminution in

sizes of various bronze objects near the end of the Bronze Age.

Of Scottish Class IV spearheads sufficiently preserved to enable the total length to be measured or accurately estimated, 96% fall into a group 3" to 7" long, while of the normal Class IIIA and IVB spearheads, supposedly a simple development of the loop attachment, only 12% are of this small size, and 65% are over 13" in length. As described, the majority of the native Class III spearheads are from 5 - 6" long. As both Class III and IV spearheads are centred mainly in the Highland Zone, their connection as regards size confirms the latter's partial origin in the former.

Of Class V spearheads, however, it is difficult to distinguish the early arrivals from the later major incursion, but the Scottish total shows 64% with lengths from 5" to 8", 26% over 11" long. As this Class V spearhead continued in use throughout the Late Bronze Age, probably this percentage of smaller specimens is largely composed of spearheads in use in the later phases, as this diminution in size was a feature of the Late Bronze Age in the Highland Zone.

The problem, then, of the large Class IIIA and IVB spearheads, is insoluble at present but it will be seen below that the recognition of a bronzesmith's industry in the south of England in LBA, enables us to derive these spearhead types from that quarter, and little or no connection with the "small-size" industry of the North need be invoked. The point to be noted is that Class IV spearheads, rarerin the South, need not stand typologically behind the Class IIIA and IVB spearheads. The chronological positions of these classes also supports this argument.

The relationship of Class IV to Class III, however, is

not in doubt, and several Scottish specimens of the former class reveal their ancestry in the appearance of the angular outline of the midrib as it nears the point, so often seen on Class III spearheads (Class III, NMA DG 6, DG 62; Class IV, DG 79, DG 98). A later feature appearing on several Class IV spearheads is a narrowing of the socket width between the wings; this is matched on some Class V spearheads, as at Newark, Notts. (Inv. Arch. GB 36, 3-4). A spearhead from Brackla Farm, Loch Ness, has a leaf-shaped blade with lozenge loops (Class IV), below which lies one rivet hole and an opposing dimple, presumably cast along with the loops. A mould from Aberdeenshire contains matrices for both Class IV and V spearheads.

Maps 6 - 9 show the Scottish distribution of Classes III, IV, IIIA and IVB, and V; while Classes IIIA and IVB present only a scatter of finds in the south-east and south-west as befits a type derived from England, possibly Ireland, and of short duration, Class III shows a penetration, although sparse, over much of Scotland. Its absence from some areas in which the former Classes are found suggests some measure of contemporaneity, and this is substantiated by associations. Class IV enlarges the picture, and shows the use of this weapon throughout the country except in the north-west. Evans' statement that this class is rarer than the basal- or protected-loop types clearly requires revision, at least in the Highland Zone (1933, 191). Indeed, the distribution of this class in Scotland is as complete as that of Class V spearheads.

From these maps, then, it appears that the Class IV spearheads had a considerable life in Scotland, extending well into the Late Bronze Age. Of interest in this connection is that the

type in Wales seems to have the same spread and long life (Savory 1958, fig. 12). The Scottish distribution further suggests that Ireland need not be considered as the only source of the type, as the south-western area shows no particular concentration, and in Ireland the finds are not particularly numerous or north-eastern. A majority of the Irish Class IV spearheads are slightly smaller than the normal Scottish specimen.

It would appear then that the looped and leaf-bladed spearhead is primarily a local product, based on the influence of Class V spearheads upon the native Class III spearhead, and in this last regard the Irish influence cannot be denied. Some penetration to the interior may have been achieved by the use of waterways such as the Galloway Dee. The rarity of the type in the Forth and Tay regions is noteworthy.

Hawkes' former decision to make the kite-shaped blade his criterion for Middle Bronze Age spearheads, rather than loops, (1941, 128) has since been revised. The abundance of Class IV spearheads in southern England, hardly ever found in association with types later than the TBB phase (Monkswood, Burgesses' Meadow), and often in Deverel-Rimbury sites (South Lodge, Thorny Down), shows the limited chronological position of the type in the south, generally considered contemporary with Class III kite-bladed spearheads in the north. But the abundance of the Class IV spearheads in Scotland seems to suggest a longer life for the type than in the south, as they appear to have the same sp spread as that of Class III.

On the continent, British Class IV spearheads are rare

found, and the associations recorded are not of much interest. The spearhead from Papenvoort, Drenthe, is unfortunately not clearly dated (van Giffen, 1938, 384, abb 27, 3). Another, from Skowarcz, Danzig, was found with two flanged axes assigned to Montelius I (Sprockhoff 1934a, 29 taf.x,2a); this spearhead has cast ribs at the socket base, not a British feature.

Ireland has not yielded any closed finds with Class IV spearheads, and moulds for the type are rare, as most of the moulds listed by Hodges are for kite-bladed spearheads (1954, 76-79). From Wales, a mould for casting spearheads of both Class III and IV is reported from Anglesey (Savory 1958, 20), and another face shows a matrix for a double-looped chisel which Savory relates to the early double-looped palstaves (Fox 1952, 23) and to the single-looped palstave with midrib that occurs in the TBB phase.

The numerous Class IIIA spearheads of southern England are only sparsely represented in Wales and Scotland, and contrast strongly with the abundance of Class IV spearheads in these areas. This may be considered an example of regional differentiation, between the lowland and highland zones, although Class IV spearheads are also seen in some numbers in the south, and Class IIIA in like quantity in the north.

The number of stone moulds for looped spearheads in the north leads Hodges to state that the south English Class IIIA spearheads must have been imported from Ireland, but he neglects the fact that the south clearly had a separate and distinctive

industry of its own at this time, during the TBB phase, and also that Ireland can only show a couple of moulds of stone for Class IIIA spearheads. The production of Class IV spearheads in the north is faintly evidenced, as most looped moulds are for Class III. The IV type must have been locally produced over much of Britain and Ireland, both in the south and the north. The IIIA spearhead seems by distribution to be a southern type, but the few moulds known are from the north. In this case, therefore, the north may have played some part.

The Deverel-Rimbury and TBB associations for Class IV spearheads show its position in the Bronze Age of southern Britain, antecedent to the full Late Bronze Age. In the north, its persistence seems to be well documented by distribution.

At Stump Bottom, Sussex, a Class IV spearhead occurs with Brighton loops (Ant.J. vi 1926, 444), and other links with the TBB group are furnished by the Monkswood and Burgesses' Meadow hoards (Inv.Arch.GB 6, 1-2). Deverel-Rimbury associations include South Lodge and Thorny Down (PPS vii 1941 128-), which suggest that Class IV spearheads survived the TBB phase, just as the type is considered to have lasted in Scotland.

At Inshoch Wood, Nairnshire, a small hoard consists of a fragmentary Class IV spearhead, a socketed hammer, and an anvil. The hammer compares with one in the Bishopsland hoard, and one from the Burgesses' Meadow hoard (PPS xii 1946, pl.xiii; Inv.Arch. GB 6). The anvil has counterparts in Scandinavian Montelius III (Broholm DOiv, fig 425), and at Bishopsland as well. Inshoch Wood thus clearly belongs to the TBB phase, or

Glentrool phase in Scotland, and other Class IV spearheads may be dated accordingly.

Other Scottish finds are not as helpful. A Class IV spearhead from Craigton near Kinross was reputedly found in a tumulus, and one from Campbeltown may have occurred with a socketed knife and other finds, but confirmation of these is unobtainable. A single-looped spearhead with leaf-blade may have been a part of the Greyfriars , Dumfries, hoard with palstaves and early type of spearhead, but the association of all these is doubtful.

A possible founder's hoard from Islay contains two socketed axes, a halberd and a flanged adze, in addition to an atypical Class IV spearhead whose flattened loops lie so close to the blade base that it has on occasion been termed a Class IIIA spearhead (Evans 1933, 196). The Callander hoard, if hoard it be, contains two rapiers, a small squat socketed axe and a Class IV spearhead with asymmetrically placed loops, a feature seen on several Irish specimens (Lagore crannog, PRIA 53c 58, fig.4B; Wilde 1857, fig.363). The socketed axe is generally considered to be a late type, and this conflicts with the other evidence that Class IV spearheads, as a whole, belong to the Glentrool phase of the Scottish Bronze Age.

CLASS IIIA:

Class IIIA spearheads, or spearheads with basal loops, are subdivided into four groups by Evans, of which three are represented in Scotland (1933, 192-3). The commonest type has loops flattened laterally and more or less continuing the curve of the blade; nine examples have been found in Scotland, only two of which occur north of the Clyde-Forth line. Another type is composed of a large spearhead with rather sharply curved blade base, and ribs running along the wings and continuing below their bases to form rectangular loops. Five of these have been found in Scotland, although Evans infers that the form only occurs in the north of Ireland. The third Scottish type is of plain leaf-shaped form, usually small, with loops scarcely flattened and resembling little more than perforations in the blade base; four Scottish examples are known, three from the south-east.

The numbers of Class IIIA spearheads found in Britain and Ireland provide a general suggestion as to the origin of the class. Evans lists 160 from England, 80 Ireland, 12 Scotland, 3 Wales. Recent finds and other additions bring the Scottish total to 22, but this does not render invalid the conclusions as to the home of the types (Evans, 1933, 194).

The Scottish distribution (map 8) shows fairly clearly that a southern, and probably eastern, source brought Class IIIA spearheads or their inspiration into the country. The map of finds from Britain and Ireland confirm that the class is not a local Scottish development (Evans, op cit, 197, fig. 1, to which additions for all areas can be made, but without affecting the overall pattern). The south-western Scottish finds may be of Irish influence, the eastern

examples however are probably derived from northern England.

A series of continental finds show that the basal-looped spearhead must have been present in Britain at an early date. The Liesbüttel, W. Holstein, grave group consists of a Class IIIA spearhead of the commonest British type, a flint dagger and a Nordic bronze-hilted dirk of early Montelius II date (Sprockhoff 1941, taf 36b; Cowen 1948, 233). The urned cremation burial at Wiesloch, Baden, links a large Class IIIA spearhead, with rounded socket and lozenge loops, with a fragmentary Rixheim sword and pottery of Hallstatt A (M.Z. xxix 1934, 56-59 taf ix, 2 and 5; Kimmig 1940, 155 taf 8B, taf 41, 8, 15). The Obergrünhagen basal-looped spearhead from north-west Germany resembles an example from Barhullion, Wigt, (Sprockhoff, 1941, abb 64; NMA DG 52), and belongs to the same horizon as Liesbüttel and Aasbüttel, Holstein (Kersten 1936, 65; Sprockhoff 1941, 78); other finds from the same area are known, and it is clear that these British Class IIIA spearheads date in continental terms from c 1300 - 1100 B.C., possibly somewhat later (also see Marien 1952, fig. 213, 2-3 - Wicheln and Oudenaarde, Belgium, the latter of string-loop type cf. Evans 1881, fig. 406; Rhein bei Mainz, M.Z. xxix 1934 taf 10, 10-11; Bargeroosterveld and Esclöermond, Drenthe, van Giffen 1938, abb 27, 1, 2).

In France, a mould for basal-looped spearheads was found at Gonfreville l'Orcher, in the Seine Valley, with a winged axe mould, and several finds of Class IIIA spearheads have been recorded from the Somme (Breuil 1903, 501, 511 fig, 5, 36-38). At Tirancourt, Somme, another of these spearheads occurred with an early type of hooked-tang sword (Franqueville 1905, 371), dated by the later Pépinville, Moselle, grave group to the late Tumulus period, possibly Reinecke B2 (Sandars

1957, 127-128).

In Ireland, steatite moulds for basal-looped spearheads have been found on two occasions, and this stone technique leads Hodges to suggest that the type is Middle Bronze Age, in date, and as seen above, this appears to be the case for some examples, although the initial phase of the Late Bronze Age in Britain has now been set back to include this type and others. The occurrence of these moulds has been taken to show that Ireland produced most of the south English Class IIIA spearheads (Hodges 1956, 48). But this does not appear to be valid in view of the evidence that a distinctive bronze industry was present in the south during LBA_1, the TBB phase.

At Kish, Co. Wicklow, a basal-looped spearhead of late type, with "perforated" base of blade, occurs with a bag-shaped axe, a faceted axe and a socketed knife (JRSAI 70 1940 94), and these associations suggest a date well in the Late Bronze Age, probably into the equivalent of Scottish LBA_2, from 900 B.C. The Kish spearhead is matched by several Scottish finds, at Swinton, Berwickshire, and Langburnshiels, Roxburghshire. At Knockabawn, Co. Sligo, a Class IIIA spearhead is linked with a disc-headed pin, of probably Scandinavian Montelius V connections (JRSAI 50, 1920 94), and a somewhat similar date applies to the spearhead from Tempo, Co. Fermanagh, found with two Ewart swords (PRIA 30c, 1912-13, 91).

From Wales, the Maentwrog hoard contains a basal-looped spearhead close in form to one from Merton Hall, Wigtownshire (NMA DG 19); the associations at Maentwrog include three rapiers, conventionally of Middle Bronze Age date (Inv. Arch. GB 10).

At Stibbard, Norfolk, a Class IIIA spearhead, of the

same type as that from Glentrool, was found with looped and unlooped palstaves, some of which relate to the Leopold Street and Burgesses' Meadow, Oxford, hoards and may be therefore dated to the TBB phase (Evans 1881, fig. 407; Inv. Arch. GB 5 and 6). A later date is suggested by the Nettleham, Lincs, hoard whose basal-looped spearhead, of the perforated type, was found with indented socketed axes and other objects assigned to the Wilburton complex, although the ribbed palstaves point to an even later phase of the Late Bronze Age (Kendrick and Hawkes 1932, 132). Other finds containing Class IIIA spearheads include Taunton Workhouse (Arch J XXXVII 1880, 94), Brading, Isle of Wight (Arch lxxi 1920-21, 138 pl x), and Sherford, Somerset (Pring 1880 pl 111), all of which date to the TBB phase, or LBA_1.

It appears that basal-looped spearheads enjoyed a long life in the British Isles, but it is noteworthy that the later associations are for those Class IIIA spearheads with blade "perforations" rather than true loops (Nettleham, Kish). The evidence also suggests that those spearheads with flattened loops are earlier than those with string loops, just as occurs with Class IV spearheads.

The only useful association for Class IIIA spearheads in Scotland is Glentrool, Kirkcudbright, but mention may be made of other possible closed finds. A basal-looped spearhead from Freefield, Aberdeenshire, may be associated with two Class VA spearheads, and an atypical example was found under a cairn, possibly with a flanged axe, at Eildon, Roxburgh. A small bronze ring is reportedly associated with another peculiar Class IIIA spearhead at Tinwald, Dumfries, and a small spearhead from Crawford, Lanarkshire, is said to have been found in a cairn with a Beaker and a bronze ring.

The Glentrool spearhead is decorated with four parallel engraved lines around the socket mouth, and with a beading along the socket midrib. In form this spearhead resembles one from the Stibbard, Norfolk, hoard (Evans 1881, fig. 407). The associations at Glentrool include Scandinavian Montelius II or III objects, and British types occurring mainly in the Somerset hoards of the TBB phase, and the Class IIIA spearhead may be dated to Scottish LBA_1, from c 1100 to c 900 B.C., (at Glentrool around 1000 B.C.).

CLASS IVB:

Class IVB spearheads, with protected loops, are rare in Scotland and have not been found in associations with other objects. Typologically the class is considered to represent a further development of the basal-looped spearhead (Evans 1933 187ff.), but Hodges suggests that the type is a devolved version of the lunate spearhead (1956, 35). The few associations recorded, however, do not support this assumption that Class IVB is contemporary with ribbed axes and sunflower pins of Irish Phase B. Typologically, too, the protected-loop spearhead is closer to the basal-looped class than to the lunate class; the blade forms of all three clases are leaf-shaped, but many basal- and protected-loop spearheads possess blades with maximum widths near their base, close to the point where the loops occur. This feature does not appear on spearheads with lunate openings.

Only three Class IVB spearheads occur in Scotland, two being nearly 20" in length. These two, from Morayshire and Fife, are closely alike in form and may have been based on the same model. Evans shows the rarity of the class in Britain and Ireland, with no particular area of concentration (1933, map 1).

Three hoards in north-east England show associations for the class, of palstaves and rapiers; in each hoard, however, a somewhat later type also occurs, such as a socketed axe and a ferrule, and this suggests that the protected-loop class should be referred to the initial phase of the Late Bronze Age (ibid 196-197). The Wallington hoard contains a rapier that appears to show some influence in its blade from leaf-shaped swords.

A Class IVB spearhead from Northumberland resembles

the Scottish examples, especially the Morayshire spearhead, and in view of the occurrence of hoards and other finds in north-east England, possibly the Scottish objects had their origin in this area.

At Chatteris, Cambs., a typologically early Yetholm-type shield is associated with a spearhead that appears to be of this Class IVB, although in some respects it might be called a late variety of Class IIIA. The association has been doubted by some authorities, but the records allow no doubt as to the authenticity of the find. As argued in another section, the Yetholm shield is considered to date rather earlier in the Late Bronze Age than is commonly believed, well within the limit of this typologically late spearhead.

CLASS V, VA, VB:

Class V spearheads appear in Northern Europe at the beginning of the Bronze Age, but do not occur in Britain in associations dated as early as this (Broholm DOiii, fig. 8-9; Montelius 1922, fig. 820-822; Sprockhoff 1941, 32, abb 25, 62, taf 12). However, Cowen shows that the British basal-looped spearhead at Liesbüttel dates to Montelius II (c 1350-1200 B.C.), and it is apparent then that the intrusive Class V spearhead must have contacted the native looped series before c 1200 B.C. at latest (1948, 233). Some of the English and Scottish Class V spearheads may then be earlier in date than the traditional beginning of the Late Bronze Age, c 1000 B.C.

The normal Scottish Class V spearhead has a leaf-shaped blade constituting about 2/3 of the total length, with rivet or pin holes placed in the socket slightly nearer the blade base than to the socket mouth. Considerable variation in size exists, ranging from 4" to 15" in length, but well over half fall within the 5-8" bracket.

There seems little necessity to separate Class V spearheads from those of Classes VA or VB, as their geographical and chronological positions are more or less identical, so these two rarer classes may be considered here. The Class VB spearhead is distinguished by its hollow head, the result of an attempt to economize on metal. The expansion of the socket hollow into the wings results in a reduction in the definition of the midrib, and the true Class VB spearheads thus possess a lozenge section (e.g. Trent River, Ant J xx 1940 272; Guilsfield, Grimes 1951, fig. 70, 7; Bogthaduff, Co. Roscommon, NM Dublin). This form is absent from Scotland, where spearheads of Class VB have only partially hollowed heads, and the socket-midrib retains

its identity.

On the Continent, hollow-bladed spearheads appear in Montelius IV, and although the blade outlines differ somewhat, the connection with British Class VB spearheads must exist. This points to the relationship between the Wilburton phase, in which Class VB arose, and Montelius IV, which is evidenced by other types as well (Broholm DB Iv 37; Sprockhoff 1937, 24-25). The contemporaneity of Classes V and VB in Scotland is shown by the hoards from Sleat, Skye, and Murrayfield, Edinburgh, in which both types occur.

The other class included here is VA, spearheads with slight beadings running along the sides of the socket and occasionally extending down to enclose the pin holes. Hoards from Torran, Argyll, and Inshoch, Nairn, show the chronological link between Classes V and VA. Spearheads of Classes VA and VB have not been found together in Scotland.

Some Scottish spearheads of Class V have leaf blades whose widest part lies near the blade base; this feature occurs on a spearhead from Bargfeld, Kr. Uelgen, dated to Montelius IV (Bath 1953 taf xxxi, 12b), and another from Oldesloe, Kr. Stormarn, this latter with a faceted socket (Sprockhoff 1937, taf 6, 17).

While these three classes of spearheads are of the same general type, a considerable divergence is seen in the dimensions of the various classes. While only 25% of Class V spearheads lie in the upper range of 11-15", 75% of Class VA fall in this range, and there are no ribbed specimens below 8" in length while 63% of the plain type are of this small size. In this respect, Class VA spearheads resemble

Class IIIA, both in size and in their common positioning of maximum blade width near the blade base. Of interest in this connection is that the distributions of the two classes are mutually exclusive, Class IIIA limited more or less to the south of Scotland, Class VA solely in central and northern Scotland.

Evidence has been presented to show that Class IIIA spearheads survived well into the Late Bronze Age in Ireland and England, and therefore probably did the same in Scotland. Their large size and distribution suggests some measure of contemporaneity with Class VA, and the Freefield, Aberdeenshire, find, if truly an associated find, shows this suggestion to be true; Class IIIA and VA spearheads are reported from this ?hoard.

Class V spearheads are found in Scotland in most of the areas most suitable or favoured for settlement (map 9), but they do not show the concentrations in these regions that socketed axes do (e.g. Don River, Aberdeenshire). Of importance in this distribution is the absence of the class, and of all other spearhead classes, from the Tay area, and the few finds from the south-west, particularly in the Ayrshire coastal plain and lower Clyde. In north-east Scotland, from the Sidlaws to the Spey, many of the spearheads were found on high ground; presumably their loss was the result of hunting expeditions, whereas socketed axes are almost invariably found on lower-level land.

Unfortunately the distribution of Class V spearheads is scattered over so much of Scotland, save in the extreme north, that few conclusions can be made regarding the source or sources of the type, although local production of these spearheads is attested by moulds.

Class V spearheads occur in many hoards throughout the British Isles, and only those illustrating particular features will be mentioned here. In Ireland, the type has been found with Ewart and Late Ewart swords at sites such as Youghal, Mollagh, and Knockadoo (PRIA 36c 1921-24, 143-146), the last-named hoard containing narrow-bladed spearheads based on the same model if not mould as those from Sleat and Cullerne. Sunflower and disc-headed pins at Newport presumably are of the same chronological position, Irish Phase B, with their associated spearhead (PSA 2nd series XXVIII, 1915-16, 153). A lunate spearhead from The Doon is generally of the same date in the Highland Zone, although the type appeared in the previous phase, the Wilburton complex, in the south (Rep. Nat. Mus. Ireland, 1932-33, 14), and the bag axes from Kinnegoe also suggest a date from c 700 B.C. for the establishment of the leaf-bladed spearhead in Ireland (PRIA 36c 1921-24, 148). However, a short spearhead, with decoration recalling that seen on Scandinavian examples of Montelius II, may have been associated with a small London-type shield from Athenry, Co. Galway, and both the decoration and shield chronology suggest an early date for this particular Class V spearhead (Evans 1881, 320, 345; Montelius 1922, 919; Broholm DOiii, fig. 9, p. 44).

In England, Class V spearheads occur both in the Wilburton complex and the carp's tongue complex, and must have only arrived here in force during these phases. Nettleham, Lincs, and Wilburton Fen, Cambs, link the type with objects such as indented socketed axes, tubular ferrules and tongue chapes, and these forms recur in the Guilsfield, Wales, hoard (Arch J. xviii, 1861, 159-160; Arch xlviii 1884, 106;

Grimes 1951, figs. 70, 71).

The Wilburton complex is considered to have persisted throughout the carp's tongue period, as shown by such hoards as Nettleham and Wick Park, Somerset (PSA 2nd series V, 1870-73, 427). But those spearheads found with objects of the carp's tongue complex may be confidently dated to the 7th or 6th century, during the main period of influence of these types. Hoards such as Felixstowe, Suffolk, and Reach Fen, Cambs, show carp's tongue objects and Class V spearheads (Inv. Arch. GB 16-17). A more precise dating may be given to spearheads found with fragments of Irish-British buckets, at Meldreth, Cambs, and Bagmoor, Lincs, the former site also yielding objects of the carp's tongue complex as at Minnis Bay, Kent (Inv. Arch. GB 13; GB 23; Worsfold 1943, pl xi-xii), all dated to the early seventh century. Other associations suggesting similar if less precise dating include a Late Urnfield cross-handled bowl at Welby, Leicester, and phalerae at Newark, Notts (Powell 1950, 27-40; Inv. Arch. GB 36).

Native British ribbed axes have been found with Class V spearheads on numerous occasions, but can be dated in general only from the seventh century (Clark, 1940, 52-).

Spearheads with hollow blades, Class VB, are somewhat more limited in their associations, but nevertheless present a picture more or less consistent with the dating for Class V. The type as seen on the continent dates to Montelius IV and this connects with the Wilburton complex of southern England, in which the form seems to have appeared (Wilburton, Cambs; Guilsfield, Wales, op cit). The VB spear-

heads in the Congleton, Cheshire, hoard may be slightly later than those in the Wilburton complex because the former hoard contains ribbed axes as well as lunate spearheads and ferrules (Ant. J vii, 1927 62). Wick Park, Somerset, also belongs to this transitional phase, with Welsh ribbed axes, tongue chape and VB spearhead, as well as Ewart swords (PSA 2nd series V 1870-73, 427; Savory 1958, 37).

Class VB spearheads also survived into later phases, and occur in hoards of the carp's tongue complex or its contemporaries, generally the latter. Irish-British buckets of early seventh century are associated with hollow-bladed spearheads at Heathery Burn, Durham, and Bagmoor, Lincs, and the latter type with ribbed axes or palstaves at Stuntney Fen, Cambs, and Nottingham (Clark 1940, 52; Inv. Arch. GB 22). Phalerae of probable seventh century date at Newark occur with VB spearheads, although the contracted midribs on spearheads in this hoard have analogies of somewhat earlier date on the continent (Kimmig 1940, taf 32, Singen, Kr. Konstanz, Baden, of Hallstatt A; but see Breuil 1903, 507, fig. 3, 17 Le Plainseau).

Class VA spearheads have fewer associations recorded, but seem to be in general contemporary with Class V and VB spearheads. Thenford Hill Farm, Northants., contains spearheads of all three classes, with Ewart swords and splay-footed ferrule (Inv. Arch. GB 12). Similar spearheads occur in the Broadward, Shropshire, and Wicken Fen, Cambs., hoards (Arch. Camb. 4th series iii, 1872, 351; Evans 1881, 464), and elaborations of the type, with ribbing prolonged to surround the rivet holes, are seen at Heathery Burn and Blacknoor, Hants., (Arch. liv 1894, 12, fig. 3; Evans 1881, 464).

Class V spearheads are not dated in Scotland earlier than LBA_3 with any certainty, but it is reasonable to assume that the type appeared here during the Wilburton phase, LBA_2 (from c 900 B.C.). The fragmentary spearheads in the West of Scotland hoard are associated with a splay-footed ferrule which may or may not connect with the Wilburton complex. Another hoard that may date to a time earlier than LBA_3 (from 700 B.C.) is from Highfield, Ross and Cromarty. The associated objects here include a lunate spearhead and various types of socketed axes; nothing need be as late as LBA_3, but the impression must be, in view of other associations for these types in Scotland, that the hoard lies in the early part of LBA_3.

The majority of hoards containing Class V spearheads are securely dated from 700 B.C., and the associations include most of the types characteristic of this period. Late Ewart swords occur with these spearheads at Cauldhame, Ballimore, Kilconan, and Heathery Haugh, and both forms with lunate and barbed spearheads and seventh century bucket at Duddingston Loch. The Type 2 and 2a bracelets at Auchtertyre also date the hoard's Class V and VA spearheads to the early seventh century. Semi-tubular mounts at Inshoch and Monmore are generally assigned to the seventh or sixth century by parallels in the south of England (Clark 1940, 52-), and the Class V spearheads in these hoards date accordingly to Scottish LBA_3.

A spearhead from the Point of Sleat hoard has been found to be identical to one in the Cullerne, Morayshire, hoard, and must have been cast in the same mould. The associated objects at Sleat include a Late Ewart sword, a Class VB spearhead, a curved socketed knife and a

cup-headed pin. The curved knife in the Cullerne hoard is extremely close in form to the Sleat example, and possibly their slight differences now apparent are due to the fact that the Cullerne knife has been used and resharpened, while the Sleat knife remains as it came from the mould. Curved knives appear to be an Irish type, as is the cup-headed pin, so that possibly the two hoards, or parts thereof, are of Irish workmanship. However, the Wester Ord hoard contains a curved knife, which is dated by its associated necklet to 700 B.C., and therefore the Sleat and Cullerne spearheads may be assigned to this LBA3, from 700 B.C. The analogous cup-headed pins in Scandinavian Montelius V do not conflict with this dating.

The Class V spearhead in the Adabrock, Lewis, hoard, dates to LBA4, probably c 600 B.C., by its association with a cross-handled bronze bowl of Hallstatt C type, and similar spearheads at Traprain Law and Castlehill, Angus, are also assigned to this phase, but date scarcely earlier than the fifth century B.C. in view of the analogies between Traprain and Lough Gara.

Class VA spearheads occur in association with Class V spearheads at Ballimore, Torran, Inshoch and Auchtertyre, and the above datings apply, generally to LBA3. However the possible association of this class of spearhead with a basal-looped spearhead at Freefield, Aberdeenshire, suggests that Class VA spearheads may date to an earlier phase of the Scottish Late Bronze Age. Typology and distribution support this possibility, as described above.

Hollow-bladed spearheads are contemporary with Class V spearheads, and are dated in Scotland to LBA3, from 700 B.C., by their inclusion in the Point of Sleat and Duddingston Loch hoards.

LUNATE SPEARHEADS:

Spearheads with lunate openings in the blade are discussed in some detail by Evans, and the process by which the type evolved from basal-looped spearheads is generally accepted (Evans, 1933, 197 ff, map 197). The normal lunate spearhead is large, ranging from 11" to 19" in Scotland, with most falling in the range 14-15". All but one of the Scottish spearheads have beadings of varying disposition running along the sides of the midrib, around the lunate openings and/or along the top of the midrib. Most show signs of rivet or pin holes, and this serves to set the type apart from the basal- and protected-loop classes wherein pin holes rarely occur.

The emergence of the lunate spearhead in the Wilburton complex in southern Britain accords well with the suggested evolution of the type from the Class IIIA and IVB spearheads which generally date to the preceding phase. The appearance of pin holes in the lunate spearhead then may be taken as evidence that Class V spearheads had arrived in force from the continent, this incursion being securely dated to the Wilburton phase.

The distribution of the lunate spearhead suggests that Ireland was the original home of the type, as finds from that island outnumber those from England and Scotland. The rarity of the type from south-eastern Scotland might be taken as support for this suggestion, but the scatter in the central area may be interpreted either way (map 10).

Associated finds are not numerous in Ireland, but typological studies suggest that the earliest lunate spearheads occur in Ireland. Several examples from the north-east have an early form of

lunate opening, and lack pin holes; these can with ease be fitted into a typological sequence leading from the late form of basal-looped spearhead into the true lunate spearhead (Evans 1933, pl. liii, fig. 2).

In the south of England, a concentration around the Thames is the only major representation of these lunate spearheads. Scattered finds occur in the west, Wales and northwards, and a few also in north-east England. The Scottish finds as stated do not clearly point to any particular source.

The class appears to be a member, if not a development, of the Wilburton complex, which is dated in the south to the centuries around 800 B.C. As it appears here in this early context, and is not dated as early in the north, it is possible that the type emerged in the south and was then adopted and produced in quantity in Ireland and the north; a similar process appears to have been carried out with other objects.

The Wilburton Fen, Cambs., hoard contains lunate, Class V and VB spearheads, along with tubular ferrules, tongue chapes and the distinctive Wilburton sword and indented socketed axe. The axe type appears in the Nettleham, Lincs., and Hounslow, Middlesex, hoards which seem to date to a slightly later period, Nettleham with ribbed palstave and Hounslow with winged axes. The Guilsfield, Wales, hoard belongs to the Wilburton phase and contains most of the objects typical of the complex, including lunate spearhead; its dating to the eighth and seventh centuries by Savory seems too low (Savory 1958, 28). The lunate spearhead in this hoard lacks the beading or ribbing seen on most Scottish examples. Another spearhead, from Winmarleigh, Lancs., may

also date to this Wilburton phase, as an early type of sword shows penetration to this northern area of objects of the complex (Ant. J xiv, 1934, 178-9). The lunate spearheads from the Trent are closer in form to the Scottish specimens than the Guilsfield spearhead (Ant. J xxi, 1941, 133). Another hoard of Wilburton date comes from Woolmer Forest, Hants., where a lunate spearhead occurs with Class V and VA spearheads, tongue chape and leaf-bladed sword, and a collared gouge resembling the Torran, Argyll, example, which also is associated with Class V and VA.

The survival of the lunate spearhead into the next phase of the Late Bronze Age in the south, just as the hollow-bladed spearhead persisted, is illustrated in several hoards containing Wilburton and Carp's tongue material. The Broadward, Hereford, hoard shows lunate and barbed spearheads with bugle-shaped objects typical of carp's tongue hoards. Congleton, Cheshire, also links lunate and barbed spearheads, with ribbed socketed axes probably contemporary with the carp's tongue complex, although the tubular and splayed ferrules are more Wilburton in appearance (Ant. J, vii, 1927, 62). Willow Moor, Shropshire, also contains lunate spearheads and Yorkshire axes (Ant. J viii, 1928, 30).

The only associated find from Ireland comes from The Doon, Athlone, Co. Offaly, but the associated axes and Class V spearheads are not particularly diagnostic (Rep. Nat. Mus. Ireland 1932-33, 14). The lunate spearheads in the Huelva, Spain, hoard are more valuable, as the associated objects can be dated to the late seventh century with confidence (Hencken 1956, 125). Lunate spearheads are otherwise rarely seen on the continent. At Mené-Tosta, Finistère, an example was found with winged

axes and a hog-back knife (Déchelette 1910, app., 40), and the type is also known from the Seine and Somme (Lindenschmit 1889, taf xlvii, 30; Breuil 1903, 511, fig. 5, 39). The Seine spearhead resembles the Denhead, Angus, specimen.

From Scotland, reports of closed finds containing lunate spearheads are common, but some of these are unacceptable, and others are of no particular chronological value. Wilson records a large spearhead of this type from an inhumation burial in a tumulus at Ardersier Point, Inverness (1863, 392). The spearhead in question is now lost, but the exact relationship can hardly be accepted, just as the lunate spearhead "taken from a grave at Crieff" requires further confirmation (Perth Museum).

At Glen Clova, Angus, two lunate spearheads of slightly different forms occur with a Late Ewart sword. One of the spearheads has a beading along the top of the socket and around the openings, while the second spearhead has beadings along the socket sides down to the lunate openings, where they turn out to emphasize the openings. A perforation is seen at the base of each lunate, matched in the Crieff example.

One of the Huelva spearheads has similar perforations as well as other holes near the top of the lunates, rather approaching the multiple-perforated spearhead from Denhead, Angus, which was found with a Late Ewart sword. The Denhead example lacks beadings and in its somewhat lozenge-shaped section it resembles the Guilsfield find, the French spearheads, as well as some from Ireland (Dublin Museum, W88).

From Highfield, Ross, a shorter spearhead with lunate

openings recalls the beaded specimens from Glen Clova, and several Irish examples (Dublin Museum, P265, W253), except that the beading continues down the sides of the socket past the lunates, as well as around them; there are no perforations. A spearhead from the Teith-Forth Rivers junction is practically identical. The Highfield associations include both an English and an Irish type of socketed axe.

At Ballimore, Argyll, a recent find shows a beaded lunate spearhead associated with Class V and VA spearheads, and socketed axes most of which appear to be of Irish form, as well as Late Ewart swords. The only closely dated lunate spearheads in Scotland come from the Duddingston Loch hoard. Three lunate examples were found, one of which is also barbed, with many swords and a fragment from an Irish-British bucket, dated to the early seventh century. A similar association is recorded in the Dowris hoard.

SWORDS

The basis for the study of the earliest swords in Britain lies in several papers by Cowen (1951, 1952, 1955) with an important review of his latest work by von Brunn (1958), and supplemented by Sprockhoff's earlier work (1931, 1934).

Cowen classifies two sword types, the Erbenheim and Hemigkofen, and claims these as the earliest bronze swords in Britain. This is based on the axiom that, as the leaf-shaped sword was developed on the continent, and came to Britain fully formed, then the earliest swords must be represented abroad, and "types which are not represented abroad cannot be our earliest" (1951, 195). As the U and V types are by distribution native products, then they are eliminated, as are the later developments from these forms.

The Erbenheim and Hemigkofen swords are the only early swords found in Britain that are represented in great numbers on the Continent, and must therefore be the prototypes of native British swords. Three Erbenheim swords are known from the Thames area, but the main concentration lies on the middle Rhine, with the Ennsdorf variant further east (Cowen 1955, maps C and D). An eastern origin for this early leaf-bladed sword is suggested (1951, 206; 1955).

The Hemigkofen sword shows a wider distribution, but is centred in the middle Rhine, south-west Germany and Switzerland. Five swords of this type are known from England, four from the Thames and one from East Anglia. On the continent the Erbenheim sword is dated by the Wollmesheim and Erbenheim grave groups to early Hallstatt A,

the Hemigkofen sword by Uffhofen, Elsenfeld and Hemigkofen to mid-Hallstatt A, possibly slightly later (1955, 130, 133-134). The general contemporaneity of these swords is also demonstrated by the emergence of a small hybrid group of swords, the Letten type, partaking of some features of both Erbenheim and Hemigkofen types.

The Erbenheim sword is characterized above all else by a flat square or rectangular projection extending from the ordinary tang end, in other words a pommel-tang (1955, taf 6, 1951 pl xiii). The blade is long and leaf-shaped, and there is usually no ricasso. The butt and tang contain numerous rivet holes, the butt is slightly U in outline, the tang has a somewhat convex central area and distinct flanges. This sword appears to be the prototype of the British U-type sword, only one of which has been found in Scotland (River Tay; see Ant. J xiv, 1934, 178-179 for related sword from Lancs).

The Hemigkofen sword is characterized by a short heavy-looking leaf-shaped blade, often outlined, and of angular section. An early form of ricasso occurs, in the milling of the edge of the blade, but there is no notch. The hilt is relatively long, comprising a V-shaped butt without much splay, and a tang with high and thin flanges. The intervening portion of the tang is also thin and gradually dies away near the end of the tang, but the flanges continue and curl outwards at their tips. There are many rivet holes. The Hemigkofen type is considered to be the prototype of the British V-type swords.

On the continent, a hybrid form partakes of the short Hemigkofen blade and the Erbenheim pommel-tang, but does not occur in Britain (Cowen 1955, taf 7).

A more exact chronological position for these early leaf-shaped swords may be established by comparisons with another sword type, the Nenzingen, which is found over a wide area of central Europe (Cowen 1955, map B). The Nenzingen sword has a straight-edged blade but in other respects is identical to the Hemigkofen type, and was the only flange-hilted sword in use in central Europe at the end of the Tumulus Bronze Age. Grave groups from Nenzingen and Reutlingen IV and XII have been dated to early Hallstatt A, those from Riegsee and Memmelsdorf to Reinecke D (1955, 125-126). The earlier sites are Bavarian, the later are south-west German, and this supports the theory that the origin of the pre-Urnfield type lies in the east, possibly in central Europe.

The Nenzingen type, Reinecke D - early Hallstatt A, appears to have supplied the hilt for the Hemigkofen type which received its leaf-shaped blade from the incoming Erbenheim type of early Hallstatt A. The Hemigkofen sword then may be dated to early-middle Hallstatt A, as suggested by its closed finds. The Letten type shows the contemporaneity of the Erbenheim and Hemigkofen swords.

As none of these types have been found in association in Britain, the date of the earliest British-manufactured swords must depend on the time allowance for their development from the exotic types, or on the appearance on the continent of native British swords in dateable contexts.

The Badegow, Mecklenburg-Schwerin, sword belongs to the British U-type (Cowen 1952, pl XV, 1). Cowen states that this type

occurs immediately after the leaf-shaped sword's introduction into Britain, dated to early Hallstatt A or late Montelius III. The distinctive feature of the U-type sword is its slotted tang. Now on the Lower Elbe, short straight-bladed dagger-swords appear, in late Montelius III, with slotted tangs (Sprockhoff's type IIC, Unterelbe). These are the only swords in the North that show the slotted tang idea.

Cowen admits the possibility that these Ilmenau Kreis swords might have carried the slot tang westwards, but argues for a British origin, based on the long life of the slot tang in Britain and on the fact that British swords occur on the Lower Elbe but no Ilmenau swords have been found in Britain. Contacts between the areas certainly existed at this time, as is shown by the components of the TBB phase in southern England, and by objects such as Class IIIA spearheads in the North.

While the argument for the derivation of the slot tang idea from Britain is reasonable, the fact remains that the Badegow sword is dated on the basis of the time lag between the introduction of the leaf-bladed sword to Britain and the emergence of the native U-type of sword. While the Ilmenau slot tang swords are late Montelius III, no leaf-bladed sword is actually dateable in the North by association to Montelius III, and it seems somewhat unlikely that the slot tang alone would have been adopted by the smiths of the Lower Elbe, ignoring the leaf-shaped blade. It is equally as possible that the slot tang idea arose in Britain as a result of influence from the Ilmenau swords during the phase of contact between the areas.

A sword with pommel-tang, an Erbenheim feature, occurs in the Spandau find which Cowen considers to be a settlement site (Sprockhoff 1931 taf 6; Cowen 1951, 207). According to him, the objects represent Montelius II and III, but none of IV, and the sword can therefore be dated to no later than Montelius III. Another pommel-tang sword, with straight sides as at Spandau, occurs in a grave at Bevensen, near Uelzen (Sprockhoff 1931, taf 8, 15-18).

Sprockhoff in 1931 did not attempt to determine the origin of the pommel-tang, although he hinted at independent evolution. His dating of leaf-bladed swords with pommel-tang, as at Parum, was Montelius V (Cowen 1951, pl xiv, 4). However Cowen argues that the overlap of Montelius III and Hallstatt A, as shown by Sprockhoff only in 1950, explains how southern Hallstatt A objects can appear in late Montelius III in the north. Thus Parum and other Erbenheim swords in the north may have reached there in late Montelius III, and the pommel-tang was then transferred to the Spandau straight-bladed type which is dated to Montelius III (Cowen 1951, 207).

However, von Brunn challenges this connection between Spandau and Parum (1958, 15-). The rapid spread of the leaf-shaped blade in early Hallstatt A suggests that the Spandau type swords would not have adopted only the pommel-tang but also the leaf-blade. And the bronzes from Spandau are, to von Brunn, of Montelius II date rather than late Montelius III, that is, of Reinecke D in Central Europe. This is too early for the Erbenheim type to have appeared, and von Brunn connects Spandau and other straight-bladed swords with more easterly finds, the predecessors of Erbenheim.

Cowen's argument for the arrival in Britain of the leaf-bladed sword in early Hallstatt A - Montelius IIIb is based of course on this early appearance of the type in the North, as he considers it unlikely that such objects, from south Germany, would reach the North sooner than Britain (1951, 208). It is however possible that these Erbenheim swords arrived in the North before reaching southern Germany in Hallstatt A, as presumably the type came from the east and only reached anywhere in the west in its fully formed state (Smith 1957, 233).

In view of the differing views on the date of the first leaf-bladed swords in Britain, whether of early or late Hallstatt A, or Montelius IIIb or early IV, it appears that the appearance of the native British types, the U and V types, cannot be precisely dated in terms of continental material.

Hodges has recently described a native British-Irish type of sword that probably is one of the earliest leaf-shaped swords in this region (1956, 37, fig. 3). The sword has a V-shaped hilt but lacks flanges or any extension of the tang at the pommel end. The tang is rectangular and has two pairs of rivets, one on each side of a ridge that runs along the hilt and down the blade, which lack any ricasso.

The type is found in the Thames and Bristol Channel area, but most came from central or northern Ireland. Hodges considers this Ballintober sword as the earliest native sword in Ireland at least, the product of native bronze workers who had seen or handled leaf-bladed cut and thrust swords. Its chronological position with regard to British V and U swords is not clear. The Ballintober sword has been

found in two hoards. At Southchurch, Essex, an example occurs with a looped palstave, which suggests to Hodges that the sword type is Middle Bronze Age in character, supported by the pairing of rivets, the lack of ricasso and flanges, and the use of stone moulds in casting.

The Penard, Glamorgan, find consists of two Ballintober swords, part of a Class V spearhead, a socketed axe with nearly parallel sides and sub-rectangular section, and a bronze tanged arrowhead (Grimes 1951, 187, fig. 71, 8-12). The associations here are extremely interesting, notwithstanding Hodges' opinion as to their value. The socketed axe recalls the Taunton-type of axe, which is itself related closely to the Hademarschen type of North Germany. And the tanged arrowhead has reasonable parallels in the Wollmesheim grave group, which contains an Erbenheim sword (Cowen 1955, tafel 19). The tanged arrowhead is also seen in southern England (Ant J, vi 1926, 182; Pitt Rivers iii pl 173, fig. 11), and in Germany where it is dated to both Early and Late Urnfields (P.Z. xxvi 1935 61 abb1; Germania i 1917 147; xviii 1934 taf 32 abb 2; xxxiii 1955 117).

The suggested date then for the Penard hoard, and for Ballintober swords in general, is Montelius IV or late Hallstatt A, and this in turn suggests that the first leaf-bladed swords arrived in Britain around 1000 B.C., during the TBB phase if not slightly earlier. In this case, the first native swords to be exported would arrive in the North of Europe in Montelius IV.

This conclusion is based on the fact that the origin of the Ballintober sword must be sought in the Erbenheim and Hemigkofen types, as well as that the distribution of the Ballintober type, in

the Bristol Channel area and Thames region, suggests its connection with the Somerset hoards of the TBB phase. The Irish concentration requires some explanation, but the sword is not foreign to Britain as some of the TBB objects are, and may well have been produced in other regions once its form was established. This in some ways is repeated in Class IIIA spearheads, whose distribution should be compared with that of Ballintober swords.

And if Ballintober is connected with the TBB phase, its appearance as typologically the earliest leaf-bladed native sword, or at least contemporary with the true swords of V and U types, supports the conclusion that the British swords exported to the North probably did not appear there until after 1000 B.C., in Montelius IV.

Several other early sword types are recorded from Britain, but presumably may be explained as reactions of workers accustomed to dealing with rapiers when confronted with the new cut and thrust swords with leaf-shaped blades. One of these hybrids, or rapier-swords, comes from Eriswell, Suffolk; this is 21" long and has a pronounced midrib on the blade near the butt, but the short hilt and heavy blade link it with early swords from the area (Ant. J XXXV 1955, 218, pl XXXIVa, fig. 1; Arch. lxxxiii, 256, figs. 15-17). The Eriswell sword was found with several rapiers.

Another version, entirely different, of an early rapier-sword comes from Sollas Moss. This has a cast hilt and the juncture of blade and hilt is represented by a slightly concave line, comparable with the horizontal base-line seen in the Blackrock hoard (C.M. Piggott, 1949), and entirely unlike the deep concave line that occurs on many

true swords of the Late Bronze Age, both in the North and elsewhere. The knobbed pommel and ribbed grip of the Sollas Moss rapier-sword may be compared with Scandinavian hilts but remain unique.

Following the arrival in Britain of the leaf-bladed sword, as seen in the Erbenheim and Hemigkofen types, the native bronze smiths rapidly devised and produced their own individual types. One of these is the Ballintober sword, as described above, but others appear to be typologically later in that they are true swords with no trace of influence from rapiers.

One of the earliest British swords is the U-type, characterized by a slotted tang and convex shoulder-line. The occurrence of one of these at Badegow has already been noted as dating probably from early Montelius IV, although a date in the later part of Montelius III has been previously advanced. The type appears to be a more or less direct descendant of the Erbenheim type, and as such the sole Scottish example, from the River Tay, may be dated to LBA$_1$, possibly in the tenth century. The lack of published work on British sword typology and distribution makes it difficult to establish the proper background for this and other early British swords.

The Hemigkofen sword is unrepresented in Scotland, but a sword from the Clyde may be a link between this early type and the true Wilburton sword. The Clyde example has a rather wide V-shaped butt, and this relates to a south English group with wide V-butts which lie behind the emergence of the true Wilburton sword. As such, the Clyde sword should be dated to Scottish LBA$_1$, probably in the tenth century. Its exact chronological relationship with the U-type sword

from the Tay is difficult to determine, although they are in general contemporary.

The wide V-type swords of the south lead into the Wilburton type, which is mainly distributed in the south and east of England. The most characteristic feature of the Wilburton sword is its butt outline, with straight shoulders leading from the tang out to exaggerated points, from which the butt then turns inwards in a concave curve to form the ricasso notch where it meets the blade proper. Generally the rivet holes in the butt are few in number and the tang invariably contains a long slot between its flanged sides which form a slightly convex outline. The midrib of the lozenge-sectioned blade extends well into the butt, and this heavy metal at the junction of the blade and hilt is another of the distinctive features of the type (Fox 1923, pl X, 15).

As stated, the distribution of the true Wilburton sword is concentrated in the south, but a variety of the type, characterized by its small size and lightweight nature, is found principally in north-east England, and the sword from Poldar Moss, Stirlingshire, is assigned to this Wilburton facies. This is the only Scottish example of the Wilburton type that Cowen admits, but several others seem to be related to the type, and are discussed below.

The Wilburton sword is one of the distinctive features of the Wilburton complex, dated in Scottish terms to LBA_2, from c 900 B.C. Cowen argues for a beginning of the Wilburton type in the earliest British Late Bronze Age (1952, 135), but the recognition of the TBB phase as the initial stage of the Late Bronze Age must place the

Wilburton complex into a second period. Savory doubts that the Wilburton complex had emerged before c 800 B.C. (1958, 30), but such a late dating does not seem practical in view both of typology and of continental contacts dated to Montelius IV, described in a later section. (See also Déchelette, 1913, fig. 68, 69; PPS 1942, 38 ff).

In addition to associated finds in the south and east of England, as at Wilburton Fen, Cambs, the Wilburton sword has recently been recognized in the Guilsfield, Wales, hoard (Savory 1958, 33); a related form occurs in the Corsbie Moss, Berwickshire, hoard. This sword is characterized by the appearance of three slots in the hilt, and no rivet holes. In appearance the sword is somewhat like the Wilburton type but the shoulder and butt outline is somewhat less exaggerated. No information on this distinct variety has been published, but probably the type is a northern facies related to the Wilburton sword but somewhat later in date. The only associated find known at present is the Corsbie Moss, Berwickshire, hoard, where the sword was found with a tongue-shaped chape, destroyed upon discovery, and a Class III spearhead. This spearhead clearly must be a survival into the Late Bronze Age of a distinctively Middle Bronze Age type, and serves to date the sword to an early part of Scottish LBA_2, shortly after 900 B.C.

Three other swords from Scotland belong to this three-slot type, from Montrose, Peebles, and Forse, Caithness. The Corsbie example has an imperforate rivet hole in each shoulder in addition to the slot, while the Peebles sword contains one rivet hole in the tang, as well as the slot. The Caithness sword is somewhat atypical in that two rivet holes occur beside the slot in each shoulder. In this respect,

it does not belong to the Three-Slot group, but as slots are not appropriate to the Ewart type, it must be assigned to the Wilburton-related type.

A sword from the Tay at Elcho is generally assigned to the Wilburton group, but the butt outline is not clearly of this early form, and the blade too betrays some Ewart influence. However, the overall impression remains that the sword is a Wilburton variant and so should be included in Scottish LBA_2. Other swords recalling the Wilburton type are known, including several from Ireland (e.g. NM Ireland W94). The Höver sword may be contrasted with this Tay example, the latter of Wilburton type with Ewart influence, the former of Ewart type with slight Wilburton traces (Cowen 1952, pl XV, 3).

With the exception of these early swords, and a few of Hallstatt-type, all the bronze swords from Scotland are of one type, the Ewart, and most of these are degenerate examples. The emergence of this purely native sword is not precisely dated, but Cowen suggests that "the native sword was directly descended from that variety of which the Wilburton hoard fragments may be accepted as type-examples" (1933, 197-198).

The Ewart Park sword was first described as a specific type by Cowen in 1933, and little work has been published on this native type since that date. The sword is generally smaller than other British types, with a leaf-shaped blade and angular butt. This butt has straight sides and shoulders, and the projection of these lines forms a lozenge outline which is a distinctive feature of the type. The notched ricasso is generally slight and is often omitted in later

degenerate swords.

The tang has only slightly flanged sides usually, and these too seem to be absent in some degenerate swords. The grip has a convex outline, the swelling generally being nearer the butt than the pommel. Rivets were commonly used for the plate attachment, although some slots occur; these however are considered to be foreign to the normal Ewart type and may reflect some Wilburton or Three-Slot influence. The end of the tang has slight lateral projections which in Irish examples may be quite long, and this widening is usually straight-based. The flanges may extend into the butt and run beside the rivet holes, and occasionally two or more slight ribs are employed to strengthen the tang.

Degenerate forms of the Ewart Park sword are especially common in the Highland Zone of Britain and Ireland, and many of these must be contemporary with the more southern carp's tongue swords, and with some Bronze Hallstatt swords. The Late Ewart sword differs from the Ewart in that it has lost its angular shoulders and straight-sided butt, and the ricasso may be only slightly represented or absent altogether.

The tang sometimes loses its curved sides and the flanges are generally thinner or even absent. In the main, the Late Ewart sword is shorter than the Ewart type, and many of the most extreme examples fall readily into a "short Late Ewart" type, which is particularly well represented in Ireland. This type is under 18" in length and the shoulders are only slightly accentuated, being mere convex curves in some examples (e.g. NMA DL 25). The number of rivet holes generally

falls to four, and the blade midrib loses its substance.

The lack of published work on British Late Ewart swords excludes the setting of the Scottish variants in their proper groups, but it appears that the later more degenerate examples are purely local in their application. A north-west Scottish group may be distinguished by the swords' wide blades, more or less flattened midribs, and thick tangs; examples of this come from South Uist, Skye, and Ross, and the Inverbroom example possibly dates the entire group to the late sixth or fifth century, in view of its analogies with bronze pommel swords in the Tarves and Grosvenor Crescent hoards.

Two Late Ewart swords, both from the east coast, reflect some influence from bronze Hallstatt swords which also are more or less limited to the east coast. These native swords show either a hooked butt, or a projection on the end of the tang.

A considerable number of Ewart or Late Ewart swords do not possess the angular butts normal to the type, but exhibit a slight concavity in the line from shoulder to blade. This of course recalls the Wilburton type of sword, but appears to be without significance in this regard. It occurs on several swords in the Meldreth, Cambs, hoard (Inv. Arch. GB 13).

One of the swords in this hoard has low ribs running along the centre of the tang, presumably as a strengthening agent. This feature is considered to be late, and characteristic of a distinct group of Ewart or Late Ewart swords, although it occurs on a sword from Montrose, which otherwise is of the Three-Slot type. In general however it is found on typologically late forms of Ewart swords, dated from the

seventh century (Inv. Arch. GB 8, GB 12, GB 13; UJA i 1938 205).

Another variant of the Late Ewart sword has recently been described by Hodges (1956 37 pl IV); this has a lozenge-shaped blade and is limited to Ireland. Recent opinion however tends to suggest that the swords in question are not of the Late Bronze Age, but whether or not they are based upon authentic examples is not known.

The distinctions noted between the Ewart and Late Ewart sword types are not of any value in the determination of chronological positions for the types, as to a great extent the proficiency of the bronze-worker is a primary factor regarding the typological position of any sword. The swords from the Grosvenor Crescent hoard, for example, exhibit all the features of the true Ewart Park type, and none of the characteristics of Late Ewart swords; yet the hoard is dated unquestionably to Scottish LBA_4, around 500 B.C., a time when the degenerate Late Ewart form was extremely common. Both Ewart and Late Ewart swords have been found together on several occasions, as at Rigg, Skye, Jacksbank, Kincs, and Kilconan, Argyll.

The distribution of Ewart and Late Ewart swords is remarkable for the rarity of these types in south-west Scotland. The significance of this is discussed in connection with rapier distribution, and suggests that rapiers continued in use in this area well into the Late Bronze Age of Scotland. While the east coast of Scotland, from the Lothians to Banffshire, show the most important concentrations of native swords, many of the Western Isles, including Islay, Shuna, Tiree, Coll, Muck, Skye and South Uist, have yielded Ewart swords (map 12). Notable also is the large proportion of Late Ewart swords in the east,

particularly around Angus, while most of the western swords are of the finer Ewart type.

Distinctions between these two forms have not been made for Ireland, although the great number of degenerate short swords has been noted. The map of Irish swords shows concentrations around Lough Erne, and in the Bann Valley and upper Shannon River (Raftery 1942a, 72). This distribution taken in conjunction with the Scottish map does not suggest any direct connection between the two areas. Nevertheless the western spread of these swords in Wales points to an Irish, or Scottish, relationship in the later stages of the Late Bronze Age, and shows that Ireland probably was exporting some swords (Savory 1958, 39-40).

The rarity of the Ewart and Late Ewart sword in the Borders is somewhat disconcerting, as the large number of these types in north-east England suggests that the Scottish eastern finds, at any rate, are partially derived from this area. Cowen mentions a number of these swords from Durham, Northumberland and Yorkshire, and the total is probably not far short of the Scottish Ewart number (Cowen 1933, 192). Possibly the Ewart type was developed in north-east England, and subsequent degeneration into variants of the Late Ewart type took place locally. The appearance of such variants as the north-western type, and the Irish short type, supports this.

Some Irish influence upon Scottish Late Ewart swords may be surmised in view of the western finds, and the Sleat, Skye, hoard, where a Late Ewart sword in mint condition was found with several Irish types.

While Ewart and Late Ewart swords are primarily a Highland Zone type, they have often been found in hoards in southern England. At Stoke Ferry, Norfolk, Ewart swords occur with Class VB spearheads, a halberd and a chape, and date from c 800 B.C. (Inv. Arch. GB 8). Thenford Hill Farm, Northants, also contains Ewart swords, dated by their Hallstatt-like rivets to after 700 B.C., although the other objects do not indicate such a late date. However, at Meldreth, Cambs., three Late Ewart swords are associated with wing-decorated axes and bucket fragments of the seventh century (GB 12, GB 13).

The Welby, Leicester, hoard contains an example of a Late Ewart sword, with run-on repair to the hilt, which is dated to the seventh century by its associated Late Urnfield cross-handles and other objects (GB 24).

A Late Ewart sword occurs in the Kirke Soby, Denmark, hoard; the sword has a perforated tang projection, and this is considered to illustrate some contact with Gündlingen Hallstatt swords (Cowen 1952, 137 pl XV, 4). Broholm dates the hoard to Montelius V (DO iv fig. 129), correcting Sprockhoff (1931, 44-45).

Many Scottish swords have been found in association with other objects, but only those providing fairly precise chronology will be mentioned here. Ewart swords are linked with tongue-chapes, normally considered characteristic of the Wilburton complex in the south, at both Gogarburn and Kilconan. However the tongue-chape at Tarves shows the persistence of the type into the final phase of the Scottish Late Bronze Age.

At Grassieslack, a Ewart sword was found with a ribbed

socketed axe, which cannot be dated before 700 B.C. in Scotland. Ewart and Late Ewart swords occur together at Rigg and Jacksbank, confirming the Grosvenor Crescent evidence that Ewart swords need not necessarily be early, but degenerate examples of the native sword are nowhere dated earlier than Scottish LBA3, from 700 B.C. The tongue-chape at Cauldhame, found with a Late Ewart sword, may equally as well be dated to a late phase.

Lunate spearhead associations are difficult to date in Scotland. The type originates in the Wilburton complex, but no Scottish finds can clearly be dated prior to 700 B.C. Such spearheads occur with Late Ewart and short Late Ewart swords at Glen Clova and Denhead, respectively. The bucket staple at Duddingston dates the Late Ewart swords and lunate spearheads to the seventh century, and a similar date probably applies to the sword in the Sleat hoard, associated with a cup-headed pin and curved knife of Irish derivation.

The survival of the Late Ewart sword into the later phases of the Scottish Late Bronze Age is shown by the appearance of two swords with Hallstatt influence in their tangs, and by the probable association of a Late Ewart and a Hallstatt sword at Haddo House. The swords at Tarves and Grosvenor Crescent extend the life of the Ewart form into the fifth century B.C., as the swan's-neck sunflower pins are dated scarcely earlier than the late sixth century.

Of Scottish hoards containing two or more swords, only two have the Ewart type alone, six have both Ewart and Late Ewart, and eight have only Late Ewart. This supports the assumption that the degenerative process took place in the Highland Zone, especially in

Scotland and Ireland, and is substantiated by the discovery of clay moulds for swords at various Scottish sites, including Traprain Law and Jarlshof, where they are dated no earlier than the fifth century.

A slightly earlier date, centred on 500 B.C., is suggested for the Scottish swords with bronze hilts and/or pommels. Two of these swords have a clay core used in the casting process, presumably applied around a normal Late Ewart tang, exposed in the Inverbroom example. The Tarves sword has a detachable pommel and bronze edging for the grip plates, the latter feature repeated on the Grosvenor sword which however also has a bronze grip.

The feature linking these Scottish swords, five in number, is the bronze pommel, and three of these have bronze grips in addition. All are of Ewart or Late Ewart type, and probably the bronze work at the hilt was applied around the normal tang. A sword from the Cherwell resembles the Leadburn example and exposes its normal-shaped tang (Evans 1881, fig. 349). Other specimens of this form are known, including several from north-east England (Alnwick Castle, Cat. of Ant. 1880, pl. XVII, 4; pl. XVIIa, 1).

Both the Tarves and Grosvenor Crescent hoards contain a sword of this type, which is thereby dated to the late sixth or fifth centuries by its associated swan's neck sunflower pins.

The bronze Hallstatt swords need not be as late as this, but clearly date from the late seventh century, Scottish IBA_4. They are distributed along the east coast, in the Tay and South Esk areas, and two Late Ewart swords with Hallstatt influence also come from this general area. However a number are known from Ireland, and all these

presumably are the result of movement from England, and unconnected with the Covesea incursion of the early seventh century.

PALSTAVES and RAPIERS

A typological survey of flanged axes and palstaves is presented on Map 13. The map is believed to be practically complete although no intensive search through the more obscure literature has been made. Nevertheless the picture presented is believed to be sufficiently exact to enable some observations to be noted.

The map shows all those bronze axeheads with a stop more or less distinct from the normal plane of the axe, the only form excluded being flat axes and those with two slightly inclined surfaces, as well as socketed axes.

The first two classes, the "early bar-stop" and "early sunk stop" are certainly early in date as well, as the Gavel Moss, Renfrew, hoard attests (Inv. Arch. GB 28, 2). The early sunk-stop class is, typologically, slightly later, possibly in date as well; the blade is usually crescentic, but not extremely wide as in the former class, where the flat and flanged axe-blade is repeated. The high or triangular-shaped flanges, more often the latter, on the early sunk-stop class are more evolved than the low cast flanges of the early bar-stop class. In addition to these features, the early bar-stop class axes are often decorated on both the flanges and the faces, and reveal their ancestry in flat axes.

It should be emphasized that these two classes, the early bar-stop and the early sunk-stop, are not considered here as palstaves, but as flanged axes, because of the non-functional aspect of the stop, which is merely a slight hump or bank in the two classes, and incapable of providing any real opposition to the haft. Some of the high flanges

on the early sunk-stop axes are hammered in, presumably to assist in the hafting.

The distribution of the early classes here described is distinctly eastern, and contrasts with the concentration in the south and south-west of late forms of palstaves.

The associations at Gavel Moss, and the typological comparisons with flat axes, ensures a date for these two classes in the Early-Middle Bronze Age of Scotland. Three or four linked rings were found with an early form at Bothywells, Nairn, but these are now lost.

The other classes may rightly be termed palstaves, as the stop is functional, and really serves as a stop for the haft. The various Scottish palstaves fall into four clearly distinguishable classes as shown on the map. Two of these palstave classes are typologically earlier than the other two, and these "bar-stop" and "sunk-stop" classes will be discussed first. The terms are descriptive, the bar-stop class formed of those palstaves with a bar running across to the flanges, the sunk-stop palstave with an abrupt drop in the thickness of the main body of the axe between the flanges.

The blades in the bar-stop class are generally crescentic or wide, in the other class they may be crescentic or narrow, and this suggests that the sunk-stop class is later in date, the general tendency in Scottish palstaves being a narrowing of the width of the blade and a straightening of the sides. The bar-stop class usually has high curving flanges, although triangular flanges are not rare, the ratio being 2 : 1, whereas the flanges on the sunk-stop palstaves are generally triangular, the ratio of high curved to triangular being 1 : 2.

The bar-stop class may be divided into those palstaves with low bars and those with high bars, not however reaching the height of the flanges (ledge-stop class). This second sub-class, the high bar-stop class, is more often seen with other typologically late features, such as triangular flanges and narrower blade, although mingled characteristics do occur.

The bar-stop and sunk-stop palstaves are distributed throughout the southern and eastern parts of the country, the only real concentration of the bar-stop class being in Aberdeenshire, while the sunk-stop class is seen most often in Galloway, and Angus.

An early form of the bar-stop palstave, possibly to be connected more with the early bar-stop class of flanged axes, was reputedly found at Lilliesleaf, Roxburghshire, with a sherd from an Encrusted Urn, but the absolute association is doubted by some authorities. Nevertheless, the relative dating of the two objects need not be dissimilar (Trans. Glasgow Arch. Soc. n.s. xiv, 30-).

Two bar-stop palstaves were found together at Neidpath Castle, Peeblesshire, and an early form of this class occurred with a flanged axe at Birrenswark Camp, Dumfries. The Greyfriars, Dumfries, hoard may have contained a late version of bar-stop palstave but the components of the find are no longer ascertainable.

The Kirtomy, Sutherland, hoard apparently contains a bar-stop palstave in association with two shelf-stop looped palstaves, and the early class thus seems to exhibit some survival in the far north.

A sunk-stop palstave in the Caldonshill, Wigtownshire, hoard occurs with typologically later ledge- and shelf-stop looped

palstaves, and a somewhat more evolved example belongs to the Glentrool hoard. The inturned flanges of this Glentrool palstave have been connected with winged-axes of southern England on occasion, but this similarity must be coincidental, as the Glentrool hoard is scarcely later than 1000 B.C. The looped sunk-stop palstave from Findowrie, Angus, closely matches the Glentrool palstave except for the loop, and was apparently found in a large hoard, a halberd being the only other possible survival.

The ledge-stop class is simply a more effective version of the bar-stop palstave, with the bar reaching the height of and merging with the flanges. These flanges may continue on down the sides of the blade, or may curve inwards to form varying designs on the blade faces, or may terminate at the stop. The blade is generally wide, sometimes crescentic, and looped palstaves of this class are relatively rare.

The distribution of this class is somewhat similar to that of the bar-stop palstave, with a spread along the east coast, but the main area lies along the southern shores of Galloway and Dumfries, and in this the ledge-stop class is comparable to the shelf-stop class. As a form intermediate between the bar and shelf-stop palstaves, this distribution is as expected.

The associations suggest some measure of contemporaneity with the typologically more evolved shelf-stop palstaves, Caldonshill linking the two classes, and Gospertie, Fife, showing a ledge-stop palstave with loop in apparent association with socketed axes.

The final palstave class is the shelf-stop, the stop rising from the plane of the blade at an angle and the end of the haft would be

partially hidden by the stop. This class rarely has a crescentic blade, usually narrow, and palstaves with loop are common. The flanged sides disappear at the stop but some form of midrib usually carries on from this point down towards the blade edge and occasionally takes the form of a trident ornament just below the stop.

The shelf-stop palstave is possibly descended from the ledge-stop class, but it is more probable that some at least of the Scottish examples are of Irish origin. The distribution is predominantly south-western, with no east coast palstaves of the class recorded from the Forth to the Moray Firth. Several occur in the Midland Valley along the Teith, one from the Clyde and one from the Tweed, and a few are known from the west coast, which may relate to the Sutherland hoards. But the main concentration in Galloway points in all probability to Irish influence.

The close similarity of the basic form to Irish palstaves tends to support this derivation, and the occurrence of Irish forms of palstave in north Wales agrees with this suggestion (Savory, 1958, 25). However, it should also be noted that somewhat similar types of palstave occur in southern England, so that the Irish source of the Galloway shelf-stop palstaves is not certain (Evans, 1881, fig. 75-78).

A palstave from Cairnleith, Angus, has three vertical ribs on each face and appears to be somehow related to the ribbed palstaves of Clark's Class I (1940, 65). The ribbed palstaves are adjudged contemporary with the carp's tongue sword complex, both by distribution and association, and this implies a survival of the palstave in the north well

beyond that considered by some authorities (Hodges, 1956, 33, Ireland). However, the Guilsfield hoard in Wales contains palstaves that seem to be related to early types, as seen in the Bishopsland and some Scottish hoards, and the Wilburton hoard also shows a palstave of this form, with very slight thickening below the stop. Wilburton is linked with Nettleham by their indented socketed axes, and the latter hoard is believed to be of carp's tongue date because of its ribbed palstaves. The survival of the palstave well into the Late Bronze Age in the south cannot be doubted (Inv. Arch. GB 37, GB 38).

The ribbed palstave may have had its origin in an early ribbed type appearing in the TBB phase (Savory, 1958, 33; Inv. Arch. GB 7, 2). The Nettleham associations also suggest that the ribbed palstave need not be considered as late as the seventh century, although the class as a whole seems to fall within this period; the Nettleham indented axes, basal-looped spearhead and tubular ferrule are all suggestive of a date earlier than that of the carp's tongue complex (Arch. J xviii, 1861, 159-160).

In Ireland, a looped shelf-stop palstave in the Bishopsland hoard is comparable to the palstaves in the Sutherland and Wigtownshire hoards (O'Riordan, 1946, pl XIII, 13); the contemporary Glentrool palstave is typologically different and occurs elsewhere in Scotland. At Charleville, Co. Offaly, a ledge-stop palstave with shield decoration is associated with a socketed axe, gouge and sickle, and illustrates the survival of the palstave well into the Late Bronze Age.

As the palstave in south England is known to have persisted into the Late Bronze Age, there seems no reason to retard the

arrival of new types or to postulate a totally different typological sequence in the Highland Zone. The late palstaves in the Worthing, Sussex, and the Shoebury, Essex, hoards are not closely comparable to the Scottish examples, and the closest analogies occur in the group of hoards belonging to the TBB phase, in the centuries around 1000 B.C.

A palstave from Kilnotrie, Kirkcudbrightshire, is close in form to those in the Leopold Street and Burgesses' Meadows hoards (Inv. Arch. GB 5, GB 6), and a fragmentary example from the former hoard is matched by one in the Caldonshill, Wigtownshire, hoard, suggesting that the Galloway palstaves of this type may be connected chronologically with the Glentrool phase of the Scottish Late Bronze Age.

Welsh palstaves are also matched in Scottish finds, and the range of types illustrated by Grimes is more or less duplicated in Scotland (e.g. Grimes, 1951, 247, 4 cf. NMA DC 81; 247, 9 cf DC 17, DC 89; 248, 1 cf. DC 129; 248, 4 cf. DC 98; 248, 9 cf. DQ 208 Caldonshill). The Acton, Denbighshire, hoard, and that from Guilsfield, have palstaves related to Scottish specimens (ibid 253, 5 cf DC 29; 253, 6 cf DC 89; 258, 2 cf DC 91).

Evans illustrates some further English palstave forms that occur in Scotland (e.g. fig. 52 cf DC 120; fig. 57 cf. DC 86; fig. 60 cf. DC 101 with trident ornament as at Crediton, Devon, Inv. Arch. GB 4, 3).

The shelf-stop palstave without decorative rib and with a square stop is reckoned by Savory to be of Irish origin, and this fits well with its distribution both in Wales and Scotland (1958, 15). The palstave with midrib is judged to be of Atlantic origin in view of its

distribution (Savory, 1958, 25). It also occurs in the Somerset hoards and in the Ffynhonnau hoard which is dated by its single-edged knife to late Hallstatt A. The conical ferrules also seem to be of Continental inspiration, and probably date to Montelius IV (von Brunn, 1954a, 7 taf 2, 2-3). Savory dates this hoard to c 800 B.C., but a date nearer 1000 B.C. is more probable in view of chronological studies lately made by Smith (1957) and Cowen (1955).

Palstave hoards in Scotland include the Sutherland finds, Kirtomy and Craig-a-Bhodaich, each with two shelf-stop palstaves, the former also containing a bar-stop palstave, and the Wigtownshire hoards, Balcarry with three shelf-stop unlooped palstaves, Caldonshill with five looped shelf-stop, one ledge-stop, one sunk-stop palstave.

One of the Balcarry palstaves recalls the midrib-decorated, extended-flange but looped palstaves of the TBB phase found in eastern England as well as the Somerset hoards. The other two palstaves in this hoard are undecorated and unlooped, and resemble one in the Caldonshill hoard from the same area (BM 75.11 - 13.2 - 3; NMA DQ 209). The other members of Caldonshill are closely related to the looped palstaves with stout midrib and no flange extension that are also well represented in the Somerset hoards and in Ireland. One of these occurs in the Kirtomy, Sutherland, hoard along with a midrib and trident-decorated looped palstave, which latter form is duplicated on a palstave from the Craig-a-Bhodaich hoard in the same area. The second palstave from Bhodaich has a stout midrib as occurs in the Kirtomy and Caldonshill finds.

Clearly the two Sutherland hoards and the Caldonshill hoard may be linked typologically and probably chronologically. The

trident-pattern palstave is always looped and is generally assigned to the Late Bronze Age by its evolved appearance and by its associations (e.g. Savory, 1958, 24; Grimes 1951, fig. 64). The plain looped palstave in the Caldonshill hoard is clearly related to the Bishopsland palstave, although the faint pattern on this latter example may also be connected with the Craig-a-Bhodaich palstave.

The chronological position seems to be clear, that these three hoards belong to the Glentrool horizon of the Scottish Late Bronze Age. Balcarry is not as certainly assigned to LBA_1, as none of the three palstaves is looped, even though one recalls the midrib and flanged palstaves of the south. The Glentrool palstave is somewhat more evolved in appearance than the Balcarry specimens.

The question of the survival of palstaves in Galloway into the second phase of the Late Bronze Age in Scotland is based upon the distributions of socketed axes and palstaves in this area, and the difficulties of this method are pointed out in the recapitulation of Childe's scheme (see Glentrool Phase, Scottish LBA_1). However, it remains true that palstaves are proportionately much commoner than socketed axes in Galloway, suggesting that their replacement by the later form was somewhat delayed in this area.

The distribution of the other main Middle Bronze Age type, the rapier, shows an identical position in south-west Scotland. Leaf-bladed swords in this area are extremely rare while the number of rapiers is relatively great (map 14). Rapiers are in general not at all abundant in Scotland, and the suggestion therefore arises that in

Galloway the rapier must have remained the dominant weapon well into the Late Bronze Age, into LBA_2 if not later (see Savory, 1958, 26 for similar survival in Wales).

The Glentrool rapier, with rivets, is unlike the majority of the other Scottish rapiers, notably those from the Drumcoltran hoard which possess notched rather than perforated butts, but both types are common throughout Britain (Evans, 1881, fig. 313-318; Inv. Arch. GB 10). One of the rapiers in the Callander, Perthshire, hoard recalls in blade form a rapier in the Crediton, Devon, hoard which was found with ledge-stop palstaves, one of which occurs in the Caldonshill hoard with another palstave of the same type as the Glentrool specimen.

The Irish connections for Scottish rapiers are suggested by the Galloway distribution, by the generally accepted opinion of the Irish influence upon the emergence of the rapier, and by the Callander ?associations which comprise a small squat axe seen in abundance only in Ireland and a spearhead with asymmetrically-placed loops also seen in Ireland (PRIA liii c 1951, 58, fig. 4B).

SOCKETED KNIVES

Socketed knives have recently been discussed and mapped by Hodges, who divides them into two types, the Thorndon and Dungiven (1956, 38).

The double-edged blade of the Thorndon knife is either straight-sided or somewhat leaf-shaped in outline. The socket is usually oval with a slight contraction nearer the blade than the socket mouth, and the rivet or pin holes are generally set at right angles to the blade. The distinguishing feature of the Thorndon knife is the straight line formed by the junction of blade and socket, these being separate parts of the knife.

Slight variations occur, those in Scotland being limited to a lack of a distinct line at blade and socket junction (Quoykea, Kilgraston), a knife with two rivet holes in each side (Alness), and two with rivet holes in the same plane as the blade (Falkland, Wester Ord).

The Dungiven-type of socketed knife is similar in most respects to the Thorndon-type, except that the junction of socket and blade results in a V- or U-shaped line, as occurs on the rare socketed swords described by Brailsford (1947, 175). Similar notches appear on leaf-shaped swords, evidence of the unequal weathering caused by the protection offered by the bone or wooden grip-plates, or possibly connected with the construction of the clay mould.

The distribution of both these socketed knife types is shown by Hodges, but his maps are incomplete for Scotland. A total of nine Thorndon knives are recorded from Scotland, but Hodges lists only

three. The Dungiven knife is represented here by three examples, one from Hodges' list belonging to the Thorndon type (1956, 36, fig. 4).

The considerable concentration of Thorndon knives in southern England suggests that the Scottish, and Irish, knives had their origin in this area. The type also occurs in northern France (Breuil 1901, 287, fig. 2, 18; Sandars, 1957, pl. xi, 3). The east English coastal scatter provides a possible route whereby Scotland may have received this influence. The distribution in Ireland is not notably north-eastern and possibly there is some connection between the Irish finds and the Bristol Channel or North Welsh examples. There are no Thorndon knives on the west coast of Scotland, and in view of their rarity in north-east Ireland, little Irish influence can be proposed (map 15).

The Dungiven type, on the contrary, is more or less limited to Ireland and Scotland. About a dozen examples are recorded from the former island, and only three from Scotland. A Welsh and an English find are presumably strays. Several Irish knives are from the north-east, and a link is provided by a find from southern Kintyre.

Significant associations for Thorndon knives in England include Heathery Burn, where a variant was found with an Irish-British bucket and wing-decorated axe. The type site of Thorndon, Suffolk, is less precisely dated (Inv. Arch. GB 11), but seventh or sixth century dates are provided by the carp's tongue associations at Minster, Kent (B.M. 1920, pl. iii), Eaton, Norfolk (PSA 2nd series xi, 1887, 42), and Grays Thurrock, Essex (Ant. J. ii, 1922, 105). Other English hoards containing Thorndon knives with comparable associations include

Reach Fen, Cambs., and Feltwell Fen, Norfolk (Inv. Arch. GB 17, GB 35). The Reach Fen and Thorndon knives contain four rivet holes as in the Alness example.

The Feltwell associations include amber beads generally considered to illustrate connections with Northern Europe in Montelius V (MacWhite, 1944a), and several Thorndon knives have been found in this area, one in the Böck, Kr. Randow, hoard which is dated to this period (Sprockhoff 1956, 14, 77, abb 4, 2 and 1).

Associated finds from Ireland include sunflower and cup-headed pins, of Montelius V relation, at Derryhale, Co. Armagh (Coffey 1913, 82), and amber beads at Killycreen West, Co. Fermanagh (Irish Nat. J., V11, 1939, 218). The socketed knife in the Kish, Co. Wicklow, hoard, was found with a bag axe, a faceted axe and a Class IIIA spear-head of late facies (JRSAI lxx, 1940, 94), suggesting that the Thorndon knife may extend back to Scottish LBA_2, from 900 B.C. However this form of spearhead has other associations suggesting a connection with Montelius V, so that it is difficult to place the initial appearance of the Thorndon knife before the mid-eighth century.

Associated finds with Thorndon knives are not common in Scotland. The most important is the Wester Ord hoard, which contains a bronze necklet dated to c 700 B.C., and the Thorndon and curved knives here may therefore be conclusively assigned to this Scottish LBA_3 phase. The bifid razor at Quoykea, Orkney, found with a socketed knife, cannot be precisely dated, but the fragmentary knives, possibly of Thorndon type (NMA xi.14.190), from Traprain Law are considered to belong to the fifth century B.C. or later.

Hodges states that the Dungiven-type knife has not been found in association, but at Forfar the type occurs with a 'bag' axe, further suggesting an Irish source for the knife. The knife from Campbeltown is reputedly also from a hoard.

In discussing curved socketed knives, Hodges draws a parallel with the hooking knife of the present-day treen maker, who uses this for the hollowing out of wooden vessels (1956, 38; Arnold 1953, 69).

Only seven knives of this type are known from Britain and Ireland, three Scottish and four Irish. The Scottish examples from the Point of Sleat and Cullerne hoards appear to have been based upon the same model, possibly upon the same mould. The Sleat knife is unused and has a wider blade, but resharpening of the Cullerne knife would result in its narrower blade, and the general socket, rivet holes and blade form of the two are so close as to suggest the possibility of identical casting. The identification of a spearhead from Cullerne as exactly similar to one from Sleat renders plausible this possibility, and in any case confirms the contemporaneity of the two hoards.

The other Scottish curved knife, from Wester Ord, differs from the foregoing in that the blade is less curved and the socket extends as a midrib into the blade on the inner side, the rivet holes are set at right angles to the blade, and the socket mouth has a rolled edge.

The distribution of these curved knives does not clearly reveal whether or not the type is locally Scottish, or of Irish origin. However, two of the Scottish finds lie at the head of the Great Glen,

and the third is in southern Skye.

This when reviewed with the associated objects at the Point of Sleat suggests with a high degree of probability that the Scottish curved knives are of Irish origin. The Cullerne spearhead and knife are clearly from the same models and/or moulds as those from Sleat, and this latter hoard also contains a cup-headed pin otherwise unrepresented in Scotland, but a feature of the Irish Late Bronze Age. The similarity of the Sleat and Cullerne spearhead to those in the Knockadoo hoard also supports this suggestion of Irish origin.

The Wester Ord curved knife may be a local product because of its different form. Its associated Thorndon knife also reverses the position of rivet holes. However, the relationship with normal Irish curved knives must be close and this provides a precise date for the entire group. At Wester Ord, the associated necklet fragments are now securely dated to c 700 B.C., and thus the curved knives of Ireland and Scotland probably belong to the seventh or sixth century B.C.

TANGED KNIVES:

The tanged and perforated knife in the Glentrool hoard appears to be a British member of the TBB group, mainly found in southern England. The Monkswood, Somerset, hoard contains an identical knife in association with a twisted neckring and loop-headed pin as well as other objects (Arch. lxxi, 1920-21, 138, pl. xi). The type however appears to have persisted into a later period of the Late Bronze Age, as a somewhat similar knife occurs in the Felixstowe, Suffolk, hoard along with a bag-shaped chape (Inv. Arch. GB 16, 3).

Another form of tanged knife is not dated earlier than the seventh century B.C.; this type has a short midrib running along the tang at its junction with the blade. Hodges suggests that such knives are evolved from the Glentrool type, but the connection is not close enough to be conclusive about this (1956, 39, map fig. 4). The type is concentrated in Ireland, with several examples in southern England, and one Scottish knife.

The English associations include a ribbed palstave at Nottingham and a wing-decorated axe at Heathery Burn, both adjudged contemporary with the carp's tongue complex. The bucket at the latter site also suggests a date in the seventh century. At Derryhale, Co. Armagh, a ribbed tang knife occurs with sunflower, disc and cup-headed pins (Coffey, 1913, 82).

The only Scottish specimen comes from the Monmore, Perthshire, hoard where a semi-tubular ring also was found. This is matched in the Nottingham hoard mentioned above, and the two hoards may therefore be considered contemporary in view of the specialized and limited nature

of the parallel objects.

A small version of the ribbed tang knife was found in a Cordoned Urn at Lockerbie, and this early association may invalidate Hodges' theory of the derivation of the Late Bronze Age ribbed tang knife from the Monkswood or Glentrool type.

SOCKETED GOUGES

The socketed gouge in Ireland has been studied by MacWhite (1944b, 160), and recently the Scottish gouges have been listed by Burley (1956, 146). There is no general work on English and Welsh socketed gouges, but Clark includes them in his table of objects contemporary with the carp's tongue complex, and thereby dates at least some of them to the seventh and sixth centuries (1940, 62).

MacWhite suggests a bone prototype for the socketed gouge, and argues that the Swiss Lake-dwellings of Late Urnfield date supplied the first bronze socketed gouges in Britain. While the relationship between Urnfield Switzerland and the carp's tongue complex of southern England has been clarified by Savory (1948, 155), it remains true that the gouge is hardly dated here before the seventh century, and so the possibility of Urnfield influence, if not Swiss Urnfield influence, remains as strong as ever.

Typologically, socketed gouges may be subdivided in various ways, and both MacWhite and Burley have attempted this. The former regards the gouge from Knocknalappa, Co. Clare, with its expanded blade and curved profile, as a late development found only in his Phase B, presumably parallel to Montelius VI and late Hallstatt. While the suggested dates seem somewhat late, the form appears to have some significant associations, in Scotland at Traprain Law and Adabrock, both of which sites date not earlier than the late seventh century, with Traprain believed to be of fifth century date.

Burley postulates two types of socketed gouge in

Scotland, her Type 1 comprising six gouges without moulding at the socket mouth, to which two further examples may be added, and Type 2 made up of three gouges, plus one addition, with either a wide flat moulding or ribbing at the mouth. MacWhite's splayed blade type appears in both of Burley's types.

While MacWhite's types do not appear to fall into any geographical pattern, Burley's Scottish types seem to have some distributional significance. Type 1 is limited to the south and east, Type 2 to the north and west of a line drawn from Kintyre to the Moray Firth. The Great Glen is the dividing line to all intents and purposes, with one Type 2 gouge lying along the route into the Glen.

In North and Central Europe, the socketed gouge is only of sporadic occurrence, but most of these are of Type 2 with collar or ribbing at the socket mouth, so that some influence from these areas may have reached northern Scotland in the general Irish-Scandinavian trade of the seventh and later centuries. However this suggestion is not advanced with much emphasis.

A hoard from Kjerte, Denmark, contains a gouge dated to Montelius V (Kjaer, 1927, 231), and Sprockhoff figures a Type 2 gouge from Zubzow, Kr. Rügen (1956, taf 11, 10). Further south, socketed gouges appear in Late Urnfield contexts, as at Schorlenberg, Pfalz (P.Z. xxiv, 1939, 158, abb 1, 34, 49, both Type 1 and 2, probably Hallstatt Bii), and at Moigrad, Rumania, with cross-handled bowls of Group B1, or Late Urnfield date (Germania xxvi 1935, 24 abb 2).

Breuil figures some socketed gouges from the Somme area, of Type 2 with collar or rib (1902, 471, fig. 2, 14, 15, 17). The

dating of most of these gouges is hardly before the eighth century; possibly the bone gouge was in use until this date, when presumably bronze became more readily available in the west.

Both Type 1 and 2 gouges are common in England and Ireland, and Burley lists parallels for the Traprain Law gouge from the latter area. In Ireland, these gouges have been found in well over a dozen hoards, the associations generally including socketed axes, Late Ewart swords and/or dress pins. These sunflower pins are generally connected with Scandinavian pins of Montelius V, as are the rarer cup-head pins and amber. None of the Irish associations are suggestive of a date early in the Late Bronze Age, and the gouge may be dated here to Hodges' Phase B, from the mid-seventh century (1956, 46).

In Wales, the Guilsfield hoard contains a ribbed gouge which is close in form to the Achnahanaid example, and to the Wester Ord gouge as well (Grimes 1951, fig. 70, 10). Other Type 2 gouges, but with collar as in the Torran example, come from the late hoard of Brogyntyn, Shropshire, hoard (ibid. fig. 68, 1-2), and in a more exaggerated form from Scarborough (Smith, Arch. lxxvii 179, fig. 4). A ribbed gouge occurs in the Harty, Kent, hoard with carp's tongue complex objects (Inv. Arch. GB 18).

Other collared gouges illustrating this seventh century date come from the Heathery Burn cave and Reach Fen, Cambs., hoard (Inv. Arch. GB 17), and from Rosebury Topping, Yorkshire, with associated Type 1 gouge and bugle-shaped mount (Arch. Ael. ii, 1832, 213 pl. IV, a-e). A collared gouge from Northumberland compares closely with the Torran example, and it seems clear that the source of the Scottish Type 2

gouges must be sought in the south and west, England and Ireland (Cat. Alnwick Castle, 1880, pl. XVa, 2).

Plain Type 1 socketed gouges are extremely common in English and Irish hoards, and the associations again suggest an initial date near the seventh century. Felixstowe, Suffolk and Croydon, Surrey, link the type with carp's tongue objects, as does the Eaton, Norfolk, hoard (Inv. Arch. GB 16; GB 39; PSA 2nd series xi, '85 42).

Both plain and collared gouges occur in the Llynfawr, Glamorgan, hoard, which shows the types in use in the sixth century (Grimes 1951, 260, fig. 72). An earlier date than this, and possibly earlier than the carp's tongue complex, is suggested by the Wick Park, Somerset, hoard where a socketed gouge is associated with ribbed axes, tongue chape and barbed hollow-headed spear, and Ewart sword; the connections with the Wilburton complex are however extremely slight (Savory, 1958, 37).

Most of the Scottish socketed gouges have been found in association with other objects, including socketed axes at Essenside Farm, Achnahanaid and Tynehead. The Class V and VA spearheads at Torran are equally as imprecise in the determination of a chronological position for gouges. A date in the seventh century probably applies to the socketed gouges from Monmore and Fortrie, whose associations include a button of Reach Fen type at Fortrie, and semi-tubular ring at Monmore. Wester Ord dates to the decades around 700 B.C., while the splayed gouge from Adabrock lies in Scottish LBA_4, from the late seventh century. The gouge at Traprain Law is believed to be no earlier than the fifth century B.C.

CHISELS

The tanged and waisted chisel has been discussed by Raftery, who suggests that the trunnion axe provided the prototype (1942b, 128). By a thinning of the butt, the tang was produced for attachment to a bone or wooden handle, and the lugs of the trunnion axe were incorporated in the chisel as a shoulder or collar.

This particular form of chisel has a rectangular tang forming about half the total length of the tool, and a shoulder below which the body thins before expanding out sideways into a wide curved cutting edge. Raftery prefers to call this a knife, used for leather work, rather than a chisel, and claims that the variety is confined to Ireland. His map shows a dozen such chisels, eight of which are located in north-east Ireland (op. cit. fig. 7, p. 130).

With such a distribution, it would be surprising if the type was absent from Scotland, and indeed several have been found. One from Glenluce, Wigtownshire, is conveniently close in form and location to the Irish examples (NMA 1931-647, cf. Raftery fig. 5, Co. Monaghan). A damaged chisel from Traprain Law has the shouldered and waisted body of the Irish type rather than the more common stopped variety, one of which also occurs at Traprain. A third chisel of the Irish type, but only slightly waisted and with angular shoulder, comes from the Adabrock, Lewis, hoard.

The associations for this Irish-type chisel are generally suggestive of a date in the later part of the Late Bronze Age. The chisel from Lough Gara is considered to be not earlier than the fifth

century B.C. in view of associations with Knocknalappa pottery and iron objects. A more evolved form of chisel, with loops extending from the shoulder, comes from Ballinderry and may be similarly dated (JRSAI, lxxxiii, 1953, 103).

An earlier date, from the seventh century, applies to chisels of this type found in some south English hoards. The chisel from Reach Fen, Cambs., has a rectangular tang, continuous shoulder, slight waist and fairly wide blade, and appears to be related to Raftery's Irish-type (Inv. Arch. GB 17, 35). Similar carp's tongue associations apply to the chisel from Eaton, Norfolk (PSA 2, xi, 1885, 42) and the Wallingford, Berkshire, hoard with its somewhat similar chisel may also be included here (Evans, 1881, fig. 193).

The Scottish associations include late seventh or sixth century objects at Adabrock, and fifth century or later objects at Traprain Law.

Distinct from this Irish-type chisel are those with lugs rather than a continuous shoulder. This tanged variety is common throughout Britain and Ireland and may be intermediate between the trunnion axe and the Irish type. The trunnion axe is unrepresented in Scotland as is the typologically early development from this (Evans 1881, fig. 197, 196). However, the trunnion axe may not have been the initial influence on the later chisels, as a tanged and shouldered example occurs in the Wessex-like grave group from Balneil, Wigtownshire, with associated Cordoned Urn, quoit faience bead and crutch-headed bone pin.

Plain tanged chisels occur at Traprain Law, and an unprovenanced Scottish find (NMA DO 7, Evans 1881, fig. 198) may be the

lugged chisel illustrated by Wilson (1863, i 381). These have rectangular tang and angular lugs but the blade has widened as in the Irish type. The form is common in England and also occurs in Ireland (e.g. Evans, 1881, fig. 195 from Yorkshire; from Derbyshire at Sheffield Museum; from Ireland, Evans, 1881, 171; also Ant. J. vii, 1927, 294, xiv 1934 56, 424).

The occurrence of a trunnion axe as well as a plain chisel in the Bishopsland hoard suggests that the former tool may have partaken in the evolution of the tanged and shouldered or lugged chisel (PPS xii, 1946, pl. xiii). Hodges has discussed the dating associations for the trunnion axe which confirm its early use (1956, 41), but the development of the tanged chisel from this tool is unproven.

Other chisel forms are also well represented in Scotland, the simplest being plain straight bars with wedge-shaped end such as occur from Sutherland to the Borders. These vary from a plain rectangular bar tapered down to a blunt chisel end (Loch Laoghal, Sutherland; Traprain Law, East Lothian; Glentrool, Kirkcudbrightshire), to slightly wider chisels (Dumfries), with expanded blades (Glenluce; Ayrshire; Dungyle, Dumfries), and finally into unique forms such as the looped and decorated object from Blairbury, Wigtownshire, and the socketed axe-like form from Muirfield, East Lothian. All these forms except the last two are common throughout Britain and Ireland.

The Glenluce chisel, with expanded blade, is matched in the TBB hoard from Burgesses' Meadow, Oxford (Inv. Arch. GB 6, 5), and plain bar chisels occur in the Early Bronze Age Plymstock hoard (GB 9, 21) and the seventh century Heathery Burn site (Evans 1881, fig. 191).

Such simple forms as these clearly had a long life.

The socketed chisel, on the other hand, appears to be a type more limited in time. None of the Scottish finds are of known provenance, although one probably was found near Biggar (NMA DO 4; DP 10). However, the type is widespread in Britain and Ireland, where it is dated scarcely before the seventh century. At Heathery Burn (Evans, 1881, fig. 202) and Bagmoor, Lincs., (Inv. Arch. GB 23, 14) associations include seventh century buckets, and the Meldreth, Cambs., hoard also associates the two objects (GB 13, 44).

Carp's tongue objects are linked with socketed chisels at Minnis Bay, Kent, which also includes bucket fragments, and Somerleyton, Somerset (Ant. J, viii, 1928, 236). A somewhat later date is suggested by the Hallstatt razors and specialized chisels in the Cardiff hoard (Grimes, 1951, fig. 66) and by the late settlement at Ballinderry Crannog 2.

Other forms of Scottish chisels occur, but cannot be dated precisely. One from Killin, Perthshire, is wide throughout and may conceivably be considered as a flanged axe. Others of this type are fairly common (Aberdeenshire; Premnay, Aberdeenshire; Loch Hope, Sutherland; Longman, Banffshire; Burreldale Moss, Aberdeenshire; Stirling Museum AJ 13), and to these may be added several small flat axes possibly used as chisels (NMA DA18, 39, 60, 109).

A chisel from Perthshire, and one from Kirkconnel, Dumfries, are alike in their expanded shoulders, parallel-sided bodies and narrow blades, and their wide and rounded tangs, somewhat recalling the Balneil chisel. As their flanges and blade lie in the same plane,

they may be considered as adzes, and if so join a group of three adzes, flanged and with varying degrees of stop-ridge. One of these is unprovenanced (NMA DC 41), one from Kintore, Aberdeen, and the third occurs in the founder's hoard from Islay with socketed axes, Class IV spearhead and halberd. This apparent association of objects of widely differing ages is seen elsewhere, as at Stoke Ferry, and at Callander, but cannot be dated with any degree of precision. The winged adzes of southern England are unlike these Scottish flanged tools and need not be connected (Ant. J, xxxiii 1953, 204; Inv. Arch. GB 38, 5).

SOCKETED HAMMERS and ANVILS

The commonest form of socketed hammer found in the British Isles is more or less square in section, with a moulding at the socket mouth and sometimes a collar below. The working surface is generally slightly convex, and the socket extends for just over half the length of the tool. Various typological classes of socketed hammers are described in JRSAI 83, 1953, 101 ff, but these do not appear to have any chronological distinctions, and the only typological differentiation lies in the form of the working end of the hammer. This may be connected with the functional aspect as discussed by Maryon (1938a, 1938b).

Such hammers are widespread in the British Isles, and are generally found with other specialized tools, usually socketed gouges as at Carlton Rode, Rosebury Topping, Harty, Grays Thurrock, etc. Other tools often associated with hammers include chisels at Carlton Rode, Rosebury Topping and Grays Thurrock, and objects such as punches, anvils, knives at Harty, Fresné-la-Mère and Thorndon respectively.

Associated finds in England suggest a date for this type of socketed hammer in the seventh or sixth century B.C., as carp's tongue objects are commonly found with the type, at Reach Fen, Cambs., (Inv. Arch. GB 17), Isle of Harty, Kent (GB 18), Minnis Bay, Kent (Worsfold 1943), Grays Thurrock, Essex (Ant. J ii, 1922, 105), and Rosebury Topping, Yorkshire (Arch. Ael. ii, 1832, pl. IV).

The only socketed hammer of this class from Scotland occurs in the Adabrock, Lewis, hoard where it is dated to the late seventh or sixth century by its associated Hallstatt C bronze bowl.

The second Scottish hammer is a part of the Inshoch

Wood, Nairn, hoard. This hammer, while fragmentary, is sufficiently preserved to show that it belongs to the second type of socketed hammer, lacking any moulding or collar at the mouth. The section is again somewhat square with convex working surface slightly narrower than that of the moulded type. This slender type is characteristic of hoards belonging to the earliest phase of the British Late Bronze Age, the TBB horizon.

The Burgesses' Meadow, Oxford, hoard contains a hammer of this type, with Class IV spearheads and unlooped palstave (Inv. Arch. GB 6), and a similar spearhead occurs in the Inshoch Wood hoard. The slender hammer in the Bishopsland hoard is also of this same type, and the associations here are dated to the same phase. Other slender hammers are found in the Somerset hoards of the TBB phase, including the Taunton Workhouse find.

The third object from the Inshoch Wood hoard is an anvil of rather specialized form, with projections from two sides of the main block. The anvil in the Fresné-la-Mère hoard is somewhat similar, and is believed to date to Hallstatt A on the continent, although its socketed hammer is of the later type, with moulded mouth (Evans 1881, 182, fig. 217-218). The Porcieu-Amblagnieu, Isère, hoard contains a hammer, anvil and saw dated to early Urnfield times (Déchelette ii 1924 173, fig. 49).

But a closer analogy for the Inshoch Wood anvil comes from Vadsby, near Copenhagen, where it is dated to Montelius III (Brondsted 1939 272; Broholm DO iv, no. 425). The Bishopsland hoard also contains a comparable anvil, as well as a socketed hammer, and must be connected chronologically with Inshoch Wood. Later forms of both

types occur in the Lusmagh, Co. Offaly, hoard (BM 1953, fig. 12, 6).

A second Scottish anvil was found in the Kyle of Oykel, Cassley River, Sutherland, and is of the same general type as the preceding anvils. The basic form seems to be repeated, in a more delicate manner, in the tools from the Isle of Harty hoard (Inv. Arch. GB 18, 24-25).

An anvil mould from Low Glengyre, Wigtownshire, was identified as such by Childe but the associations cited, Cinerary Urn and Pigmy Cup, are not now believed to be truly connected with this curious object (PSAS lxxx, 1946, 10).

The distribution of socketed hammers and anvils is limited in Scotland to the north (as is the spread of curved socketed knives). The explanation of this may be that these northern regions were not reached by traders from Ireland with beaten bronze and gold work, and local craftsmen produced the necessary articles for the area. While there is no direct evidence that the Helmsdale gold-field was ever worked in the Late Bronze Age, possibly these tools show some evidence of its exploitation.

S I C K L E S

The bronze sickles of Britain and Ireland have been studied by Fox, and may be separated into socketed (1939b) and non-socketed (1941). In Scotland only socketed sickles have been found, but a brief discussion of the non-socketed class with special referance to its dating associations may be of value with regard to the distribution map (map 16).

Most of the non-socketed sickles of Britain are of cast-plate type, with flat backs, and ribs or knobs on the front or side. The thickest part of the tool is near the outside curve. Schmidt divided these sickles into a riveted or Lochsicheln, Type 1, and knobbed or Knopfsicheln, Type 2 and Fox uses this division in his discussion of British specimens (Schmidt 1904).

Group I are riveted sickles, with ribs extending to the base of the tool which has either basal notch or rivet hole for the handle attachment. Continental forms have a claw at the back but this is not seen on British sickles (Behrens 1916, abb 10-11, Montelius III and IV).

Group I, Type A sickles have plain continuous outer curves and most are found in the Thames area. Type B sickles have vestigial claw projections at the back and only two specimens are known.

Group II or knobbed sickles are divided into three types, Type A with a single round knob at the base and found mainly in south-east England. Type B has elongated knob or transverse rib at the butt and Fox records four examples from Somerset; one occurs in the Bishops-

land hoard. Type C sickles have double knobs and are limited to the Somerset region again.

The distribution map shows that Group II, Types B and C, are entirely western, Type A is eastern both of Group I and II. Fox distinguishes those British sickles showing unmodified continental form from the native derivatives, and concludes that Group I, Type A, is the only type with many native forms.

The East English sickles, IA and IIA, are relatively late as IIA occurs in associations with objects of the carp's tongue complex at Minster, Kent, and Grays Thurrock, Essex, and IA is connected with the Old England Brentford site. A IB sickle from Llantwit Major is also of this seventh or sixth century date. Knobbed sickles resembling British IIA sickles occur in Late Urnfield contexts on the continent as at Homburg (Auh V v, 1911, taf 25).

Sickles of Type IIB and IIC however are different both in distribution and association, and Fox's arguments for a late dating are not sound. These sickles occur in such Somerset hoards as Monkswood and Edington Burtle, whose associations link this area with Scandinavian Montelius II and III. Similar sickles are found in Northern Europe in hoards of this date (Broholm DO iv, no. 407; see also P.Z. xxxvi, 1958, 1 ff and Germania xxiv, 1940, 6 ff).

The Somerset group, and Bishopsland, are now assigned to the initial phase of the British Late Bronze Age, and these sickles of Type IIB and IIC clearly belong to this early period.

Over sixty socketed sickles are listed by Fox, all of which have a double-edged blade, the upper sometimes not sharp, but the

thick part of the blade is invariably in the centre. Two groups of socketed sickles are described, I being those with socket placed laterally at the blade base, II being those with socket set vertically at the base. Most of the sickles are of Group I.

A logical typological development in the Group is supported to a limited degree by associations. The earliest sickles have cylindrical sockets open at both ends, which gradually narrow at the upper end and finally close producing a cone-like shape. The closed-socket sickles are the latest form, and their positions in the typological scheme proposed by Fox depend upon other less functional features. An open-socket sickle occurs in the Downham Fen, Norfolk, hoard with a palstave and a rapier (Cambridge Museum), and another example was found in a hoard at Arganuil, Portugal, with a palstave form that occurs in Ireland (MacWhite, 1951, 76, fig. 22).

The early sickles have their blade attached to the entire side of the socket, and later sickles show the gradual rise of the blade, at first the outer curve running smoothly into the socket top then overriding and merging with the socket until the two are more or less a single entity, with the back view showing an even cone rather than a truncated cone (Fox 1939b, 236, fig. 9). Later features include the heeling-out of the blade and the projection of the mouldings on the blade across the top of the socket.

A typologically late sickle from Cardiff is associated with Hallstatt razors and ribbed axe, as well as evolved chisels, and the sickles in the Llynfawr hoard are dated by the cauldrons and sword

to c 600 B.C. A decorated sickle from Longy, Alderney, occurs with seventh century or later carp's tongue objects.

None of the Scottish sickles have been found in association with other objects, but all appear to belong to the later stages in the development of socketed sickles in Britain. Fox lists three Scottish sickles (No. 25, 27, 29), but several others have been recorded. One from Ledberg, Sutherland, is unfortunately lost, as is another from Alford, Aberdeenshire, just possibly the same sickle as No. 25. In addition to these, an unprovenanced sickle in the Hunterian Museum may be Scottish, as it formed part of the original collection. This specimen has a heavy medial rib with lighter flanking ones, and long socket with pin holes, and a devolved or vestigial loop at the back of the blade, possibly modelled after the rare socket-looped sickles that occur late in Fox's scheme. The sickle is decorated with V-shaped bars, and appears to be the latest of the Scottish examples known (see Breuil, 1901, 291, fig. 4, 38 for socket-looped sickle of comparable type).

The distribution of socketed sickles shows that the early types come from southern England, and the majority of the typologically later examples are Irish or north British. Fox regards the late sickles of Britain as being of Irish derivation, including the Scottish specimens. In general this pattern is seen in the spread of other objects, the earlier forms appearing in the south, and later developments occurring mainly in the northern area.

Fox's discussion of Group II socketed sickles, vertically

socketed, is concerned with only eight British specimens. He derives the type from the Thorndon knife, with a simple curve in the blade. The socket is always a separate part of the tool, and does not merge with the blade as in Group I sickles. No Scottish sickles belong to this Group II, but the curved socketed knives must be related in some way, if only in a common prototype.

The only associated find containing a Group II sickle is Rosebury Topping, Yorkshire, where the objects include a bugle-shaped mount and ribbed-axe mould suggesting a seventh or sixth century date. The typologically late sickles of this group are Irish (also see Davies 1950, fig. 17). Probably the entire group belongs to a late phase in the development of Group I sickles.

F L E S H - F O R K S

The most recent discussion of flesh-forks, or flesh-hooks, is in the report on Ballinderry Crannog 2 (Hencken 1942, 12-13), but neither typology nor chronology is established here with any precision. The report on the Lulworth, Dorset, hoard lists all the flesh-forks known in 1935 (Ant. J, xv 1935, 449), but since that date several more have come to light and Appendix 1,27 shows a total of thirteen from Britain and Ireland; three examples from France have also been noted on occasion (ibid).

In addition to these, the suggestion has been advanced that the elongated mounts with expanded foot, as in the Thenford Hill Farm, Northants., hoard (Inv. Arch. GB 12, 7) may be the ferrules of goads or flesh-forks (Piggott, 1953, 179).

The more normal type of spear-ferrule has a tapered end, and of course this would offer no resistance in the act of hurling. The splayed-foot ferrule, on the other hand, would not be suitable for attachment to a throwing weapon, and it is possible that these were employed as base-pieces on either objects such as flesh-forks or ceremonial objects such as extremely large and unwieldy spearheads.

However, some splayed-foot ferrules have been found with normal spearheads, as at Thenford Hill and West of Scotland. The socket with flat disc-like foot in the Eaton, Norfolk, hoard occurs with both spearheads and a flesh-fork, and ferrules of both types come in the Congleton, Cheshire, hoard with large lunate and barbed spearheads (Ant J vii, 1927, 62). In addition to the splayed ferrule from the West of

Scotland hoard listed by Piggott, an early find is illustrated by Gordon (1726, pl 1, 7).

The flesh-forks found in Britain may be divided into two types. Type 1 flesh-forks are simple in form; a one-piece bronze bar of square section is curved in the middle, and the two more or less parallel halves are curved and tapered to points. Type 2 flesh forks are more elaborate; here the square-sectioned bar is held at the middle by a hollow T-shaped tube, and the bars as they emerge from the ends of the crosspiece curve inwards until they nearly or actually meet, then curve away and up to end in tapered points.

The Type 1 hook is attached directly to a tube, passing through large holes, while the Type 2 hook passes through a holder which is itself the crosspiece at the end of a tube. In some cases the hook merges with the flanged holder (No. 8), in other cases the division is distinct (No. 9).

The tube ranges from 4" to 7" in length, with a perforation near the socket mouth, in Type 1 forks. The butt ends of both Types exhibit a considerable degree of uniformity, however, and no distinction can be made between the Types. The length ranges from 5" to 7", with perforation near the mouth, and the extreme end consists of some sort of hollow biconical knob (No. 8) or flat disc-like projection (No. 3), to the end of which is attached a holder, either a half-ring attached directly to the knob (No. 8) or a small ring fastened by a small bar to the hollow knob through a perforation (No. 5). A large ring rides in this holder where it has survived (No. 8).

Two flesh-forks from Ireland are decorated, that from Lurgy (No. 3) with transverse groups of incised lines on both butt and hook-holder, and the same decoration appears on the elaborate three-piece flesh-fork from Dunaverney Bog (No. 9), with the addition of seven modelled ducks riding above rings, attached by holders fitted in perforations on the central and butt sections. The hoards from Lulworth (No. 7) and Eaton (No. 6) both contain four bronze rings, possibly attached in like fashion to either a missing centre tube or to the wooden shaft directly.

Seven flesh-forks come from Ireland, of which total four are Type 1, one Type 2, two unknown; four are south English, one of Type 1, two of Type 2, one unknown but probably Type 1; two are Scottish, the extant example being Type 2. The French finds include at least one of each Type, Thorigné of Type 2, Launac of Type 1 (L'Anthrop vii, 1896 462, fig. 1; Déchelette ii, 1913, 553, fig. 227, 6).

Hencken suggests a Hallstatt date for these flesh-forks, equivalent to the later phase of the Late Bronze Age in Ireland. The Ballinderry forks he thinks are debased and this confirms the late dating for the site. But while this late dating of Ballinderry is not disputed, the forks here are matched in the Bishopsland hoard which is securely dated to the earliest phase of the Irish Late Bronze Age (Hencken, 1942, fig. 3, 528; O'Riordan 1946, pl. xiii, 15). And the Eriswell, Suffolk, flesh-fork was found with or in close proximity to an early form of sword and two rapiers as well as fragments of a beaten bronze vessel at present unidentified (Ant. J xxxv, 1955, 218). Type 1 flesh-forks, a

simple form, appear therefore to have been in use, mainly in the Highland Zone, throughout the Late Bronze Age.

Type 2 flesh-forks, however, may be more limited in their chronological position. The associations at Lulworth, Dorset, include a bugle-shaped object and part of a carp's tongue sword, and at Eaton, Norfolk, a bugle-shaped mount and a bag chape occur with a Type 2 flesh-fork and ribbed palstave and axe. Both hoards can therefore be dated to the seventh or sixth centuries B.C.

The Dunaverney decoration of modelled ducks may be considered as of Hallstatt (C) date, but similar objects also occur on some articles of Montelius V date in Northern Europe (Sprockhoff, 1956, taf 21, 3). A date therefore for Type 2 flesh-forks should not be too far from the seventh century B.C.

The Eaton hoard also contains a tubular socket with disc base; this may be compared with the conical ferrules with terminal discs seen in the Launacian industry, with its end-winged axes, Hallstatt razors and triangular blades, and dated to a time roughly contemporary with the carp's tongue complex (Déchelette ii, 1913, 553). A triangular blade, but with perforation, from Eaton, links both with the carp's tongue complex and with Launacian blades, and it is interesting to note that a fragment of a flesh-fork occurs in one of the Launacian hoards (ibid).

RAZORS

This discussion will be restricted to Class II razors and is based to a great extent upon C.M. Piggott's study (1946, 121). While Class I razors were included in this work, it has since been shown that most of these must be dated to the Middle Bronze Age, as Mrs. Piggott suggested (Butler and Smith 1956; J. Barber, 1958).

That evidence exists for the use of Class I razors in the Late Bronze Age is admitted by Butler and Smith, and they cite hybrid examples from Taunton and from Glentrool. The Ballymena, Co. Antrim mould contains matrices for both Class I and II razors (Piggott, 1946, pl. viii), and from Scotland comes a stone mould for a possible Class I razor with another mould for a Class IV spearhead (PSAS lxxxi, 1946-47, 171, pl xx, 1).

The definition of Class II razors reads as follows, ".... characterized by a deep notch at the top of the blade, and frequently a round hole is pierced through the blade below the notch. There is often a pronounced midrib, sometimes roughly decorated, and the tang is never pierced ...." Recently Hawkes has completed this description by subdividing Class II razors on the basis of the shape of the base of the blade.

Class IIA razors show an even upward curving or slight angulation, obtuse, from the top of the tang into the blade proper. Class IIB razors have the division between tang and blade base sharply marked, the edge of the blade forming an acute angle with the tang, then turning sharply upwards to complete the bifid razor outline.

The distribution of these two types presents an interesting picture (based on Piggott, 1946, fig. 2), the south and east of Britain showing predominantly Class IIA razors, while Class IIB is practically the only type represented in the Highland Zone, especially Ireland. Hawkes has suggested that Class IIA is "IBA$_1$", Class IIB is "not pre-IBA$_2$", and thus it appears that the development of the later form of the bifid razor took place in the North, just as occurred with several other bronze objects as sickles, swords and shields.

Class IIB razors are dated by associated finds to the seventh century or later at various sites including Heathery Burn (Arch. liv, 1894, 88), Feltwell Fen, Norfolk (Inv. Arch. GB 35), Cromaghs, Co. Antrim (PRIA xxvic, 1916, 119), and Dowris, Co. Offaly (Macalister, 1949, 223), as well as Lough Gara (NM Ireland). There is no association for true Class IIB razors that suggests an earlier date in Britain or Ireland.

However, Hencken illustrates a razor from Sicily that appears to represent an import, not a local type (Childe, 1930, 99-100), of Class IIB, and dates this to Pantalica II in the tenth or ninth century B.C. (Hencken, 1956, 160). The Cassabile razor is not purely Class IIB, for it has deep notches at the blade base, an extremely acute angle, which is rarely seen on British razors. The Lough Ravel, Co. Antrim, razor is similar in this regard, but has the normal perforation while the Sicilian razor has none (Piggott, 1946, no. 61).

Nevertheless, this Sicilian example is clearly related to the British type, and points to a western home for the bifid razor. The general type occurs in various areas of western Europe, in the Rhine,

Alsace, Brittany and central France, and in the south but Mrs. Piggott points out that the razors from these areas have features not seen on normal British Class II razors. Such styles as open-work handles and crescentic blades appearing in Late Urnfield times are clearly not related to British bifid razors (Déchelette ii 1913, 553; Auh V v 1911, taf 25, 435; Wagner 1943, taf 25, 19; taf 7, 9).

But these appear to be elaborations of razors seen in these areas in early Urnfields. The razor from Labersricht, Oberpfalz, has an openwork handle but the blade is oblong and has a V-notch as in some British examples (Auh V v, 1911, 234), and that from Nymwegen has a similar handle but elongated blade with notch and perforation (Auh V II, 1870 viii, taf 2, 20). The notch is widened into a crescent in a razor from Wilten dated to Hallstatt A, Wagner's Zeitgruppe II, and seems to be leading into the true crescentic blade via Zeitgruppe III, late Hallstatt A to early Hallstatt B (Wagner 1943, taf 33, 12 and taf 25, 19), the razors of which have rounded blade with a large central hole joined to the straight-sided notch.

This form is seen in a less-rounded razor from Amiens which approaches the angular blade base of some British razors (Breuil 1901, 289, fig. 3, 27). Further afield, an Early Bronze Age grave at Duna-Pentele, Hungary, contained a tanged oblong-bladed razor with simple small perforation at the top, and this is fairly close in form to the British types, except for its stiffness; the neighbouring grave 3 yielded a similar form but with rolled top and concentric decoration, and seems to be related functionally to the above "razor" (P.Z. XI-XII,

1919-20, 117, abb 1, 3 and abb 1, 9-10 respectively; see also Pič 1900 a tab x).

None of these can be connected directly with British bifid razors, but most reveal one or more of the distinctive features of the British type. Childe points to razors, more closely related to Britain from the Ariège and Charente (1930, 100; Montelius 1912), and Sanders illustrates a notched razor, Class IIA, from an inhumation grave at Pouges-les-Eaux, Nièvre, and dated by its associated convex disc-headed pin to Tumulus Bronze or very early Urnfield France (1957, 144, 146-7). This razor looks typologically early in comparison with the British forms.

Several razors from Fort-Harrouard iii/iv, dated to Hallstatt B, are comparable to some of the Class IIA razors from south-east England, although they lack perforations (Sandars 1957, 268, 276). Mrs. Piggott regards the British tanged, notched but imperforate razors of Class II(A) either as a parallel development to Fort-Harrouard or as imports from France in early Urnfield times.

Savory has plotted the distribution of Class II razors in western France (1948, 165, fig. 5; list 171; 1958, 20), and Sandars notes that the southern French Urnfields have as yet not yielded any of these, although they do occur in the Alpes-Maritimes and Haute-Garonne. Their north coastal distribution, and the early associations of palstaves and Tumulus pin (Arbas, Fort-Harrouard, and Pouges-les-Eaux) suggest that the diffusion of the type, possibly developed in north coastal France, began in late Hallstatt A but persisted in the area for some

considerable time as it occurs in carp's tongue hoards at Vénat and St. Grégoire, etc.

The perforation below the notch seems to be a British feature and does not occur, for example, on the early razor from Pouges-les-Eaux nor on the late razor from Vénat. In view of the French distribution, mainly concentrated in the north-west coastal area, possibly the British razors may be taken as the original type which spread with slight changes to the continent. Offsetting this however are the early associations recorded from the French sites, the occurrence of the form in the south, and the Sicilian razor must also be considered in this regard.

Savory's work on coastal French industries shows that separate and local bronze types were developed in the area during the late Middle Bronze Age, and it seems most satisfactory to attribute the development of the bifid razor to these independent industries. The French form is close to Class IIA British razors which is considered to be earlier in date than the Class IIB razors mainly found in the Highland Zone.

The diffusion of types from the local French areas is deemed to have begun "before the Hallstatt B expansion of the Urnfield culture" (Savory, 1948, 159). This would coincide with an early phase of the British Late Bronze Age, and would allow the bifid type to contact the Class I Middle Bronze Age razors, producing some but not all of the hybrid Class I - II razors.

A razor from the Taunton hoard is listed as of Class I

but its occurrence in a hoard, its grooved midrib and possible notch should place it by definition in Class II (Piggott, 1946, No. 31; Arch. J, xxxvii, 1880, 95). Its narrow blade and general appearance suggests some influence from Class I, and if it is considered as a hybrid type, its chronological position, in the TBB phase, is seen to suit its nature well.

The razors from the Glentrool hoard also belong to an early category, as they exhibit features of both Class I and Class II. The smaller of these two razors differs from the normal Class I in its greater blade width, and from Class II in its lack of notch, perforation and pronounced midrib. The other razor from Glentrool has a long tang of Class I, and wide blade of Class II; the blade base extends at right angles from the tang and there is a slight midrib. The associations at Glentrool confirm that these hybrid razors belong to the initial phase of the Late Bronze Age.

A razor from Laughton's Knowe, Orkney, was found with a cisted cremation and Cordoned Urn; this normally would be considered Middle Bronze Age, but the hybrid nature of the razor suggests that the burial lies late in the Middle Bronze Age and points to the arrival of bifid influence in Scotland before the beginning of the Late Bronze Age. Of course the remote area where this find was made may help to explain the late dating of the burial. The razor has a wide blade and pronounced midrib, both Class II characteristics.

Another Class I - II razor comes from Traprain Law and is unfortunately fragmentary, only the lower part being preserved. This

shows a tang and blade expansion of Class IIA type with a perforation at the base of the fairly wide blade. Such a position is extremely rare but occurs on a razor from Co. Mayo found in a cremation cemetery of Cordoned Urns.

Another hybrid form comes from the Adabrock, Lewis, hoard, but its blade base is slightly bent back, a Class IIB feature, and this may suffice to account for the late dating of Hallstatt C. However the lack of notch and perforation is peculiar to this class. The other two razors from this hoard are of the more normal Class II type, one of IIA, one of IIB.

Most of the other Scottish bifid razors come from hoards generally dated from the seventh century B.C., and are mainly of Class IIB (Bowerhouses, East Lothian; Quoykea, Orkney; Cullerne, Morayshire). The pottery found at Bowerhouses is untraceable and of unknown type. The razor from the Braes of Gight, Aberdeenshire, hoard appears to be a slackened version of Class IIB, with notch placed askew and only slightly marked.

A razor from Kinleith, Midlothian, belongs to Mrs. Piggott's Class III, generally of continental Hallstatt C date, although parallels for the Kinleith example are not known. However, the openwork blade and tang are suggestive of evolved continental types. A second Class III razor was found at Traprain Law, and has a curved blade with basal loop and a perforation along the thickened blade back. It resembles one from Sion Reach, Thames (EM 1953, fig. 11, 13), and several from Old England, Brentford (Wheeler 1929, pl. 1, fig. 2, 3 and 7). Other comparable examples occur in Scandinavia (Montelius 1912, fig. 637) and in France (Breuil 1901, 289, fig. 3, 31; Henry 1933, 52, fig. 16, 3).

SHIELDS

The basis for the study of beaten bronze shields lies in Sprockhoff's Handelsgeschichte (1930, 1-44). Later work by MacWhite (1947, 1951) and Hencken (1950, 1951) has been superseded to a great extent by Sprockhoff's recent review of the evidence for the origin of these shields (1954), but the general classificatory system remains in his earlier work.

However Sprockhoff based his typological analyses upon Evans (1881) and Smith (1919) and seems to have misread some of their pertinent observations as well as repeating some of their mistakes in descriptions. This has necessitated here a completely new approach, with every original report checked, and the classification system here proposed will at least have this in its favour. It will be noted however that Sprockhoff's type-names have been employed to save undue confusion.

Hencken summarized the views of Irish prehistorians in 1951 when he tried to show how the Herzsprung shields of V-type originated in Greek lands probably in the late ninth or early eighth centuries B.C. The Spanish rock carvings showing similar shields were dated by MacWhite to 900-650 B.C. (1947, 160), but Hencken reduced this date to the late sixth century. He suggested that the U-type of Herzsprung shield was based upon the V-type, although recognizing that a U shield in the Pilsen, Bohemia, hoard dated to Hallstatt A or 1050-750 B.C. by Hawkes 1948 chronology.

This chronology has since been discarded by Hawkes as being too low (1957, 157), but in any case it seems difficult to

establish Hencken's reasons for suggesting that the V-type of Herzsprung shield antedated the U-type except that Greek inspiration was believed to be responsible for the type.

However, Hencken's conclusions that the U-form was a Central and North European feature, remains true, and both forms occur in Ireland. Sprockhoff has now reversed Hencken's typological chronology by showing that the U-form of Herzsprung shield is the earliest Herzsprung type (1954, 73-77). The evidence quoted is again the Pilsen hoard which with its wing-flanged axe, sickle blades, decorated disc, sword blade and Hügelgräberkultur urn cannot be later than Early Urnfield, Reinecke D - early Hallstatt A, c 1100 B.C. This is in accordance with present evidence that beaten bronze work appeared in Central Europe in Reinecke D, c 1200 B.C. and in multiple forms throughout Europe in Hallstatt A and B (von Merhart, 1952).

The earliest Herzsprung shield, that from the Pilsen hoard, is relatively plain with a simple rib running around the circumference and another nearer the centre. Inside this second rib is a penannular rib ending in points, the gap being extended into the central area which is composed of a raised oval with U-shaped indentation at the shield's surface level. A handle is attached on the underside, the large fastening rivets showing on the exterior in the U-gap and between the oval centre and the penannular rib. Two similar but miniature handles are attached to the inner surface between the penannular and annular ribs slightly above the centre, with U-notch uppermost, presumably for the attachment of a carrying strap (Sprockhoff, 1930, taf 4).

Four other shields are dated by Sprockhoff to this same Early Urnfield period, from Schiphorst, Kr. Lauenberg (ibid taf 1, 2), Nipperwiese, Kr. Greifenhagen (ibid taf 1, 1), Bingen, Rhinehesse (Auh V I, 1858, xi, taf 1, 4-5), and Spalt, Bavaria. These belong to another of Sprockhoff's types, the Nipperwiese, and are plain shields with simple ribbings to strengthen the plate, one at the circumference and two in the interior outside the central boss. This boss is bordered by a preliminary expansion. The rivet-attached handle is joined on the inside of the shield by single-riveted lugs such as occur on the Yetholm and Harlech types as well as some other British shields. The Nipperwiese type is the simplest form of shield seen in Europe and could conceivably be the antecedent of the early Herzsprung or Pilsen shield.

A Nipperwiese shield from Bamberg, South Germany, has recently been dated by Reinecke to Bronze Age D or Montelius II-III, and therefore predates the Pilsen shield and the Herzsprung series (Reinecke 1956, 23, taf 3). The Nipperwiese type then is the earliest of the Northern bronze shields and its plain ribbed decoration may be taken as the prototype for the later series.

The later U-type Herzsprung shields, following the earlier or Pilsen type, have a more northerly distribution than the early types, and are found mainly in Denmark, south Sweden and northern Germany. One occurs in northern Italy and two in wood are Irish, Annadale and Cloonlara (Sprockhoff, 1954, abb 21). It seems clear that the type was adopted in the North and presumably reached Ireland from this quarter.

The true Herzsprung shields, of U-type, show the first

shield evidence of boss-work, although plain ribbed specimens also belong to this series (Auh V III, 1881 vii, taf 2, 1-3). A Danish shield of this type has a wide plain rim, then, nearing the centre are three concentric ribs, the outer two of which have the familiar U indentation, the third rib being penannular to allow the uninterrupted indentation (Broholm, DO iv, 108). At the centre a wide flat boss has a U-shaped notch with rivet, for the handle attachment, within. This is one of the simplest Herzsprung shields and shows no boss work at all.

Another from Denmark has identical ornamentation in the central portion of the shield, but the wide rim is interrupted by two more or less concentric lines of bosses set well apart (Hencken, 1951, pl VII, 16).

A third Danish shield is matched by one from the type site in Kr. Ostprignitz which has a small oval central boss surrounded by a penannular rib, two ribs with U-shaped indentation, then a series of alternating lines of small bosses and thin double ribs (Broholm DO iv 107; Sprockhoff, 1930, taf 5b). This series of lines is only interrupted by transverse double ribs and bosses that extend from the outermost ribbing towards the centre, halting at the first large U-indented rib. The second Herzsprung shield is identical except that this transverse decoration is absent (ibid taf. 5a).

More elaborate versions exist, a Swedish shield showing a similar central arrangement with two rows of bosses, separated however by large bosses and bird-like decoration (ibid taf 6). In addition, the transverse decoration consists of central bosses with concentric decoration exactly as occurs on sunflower pins of Montelius IV and V;

this shield, with Punktbuckel boss-work, is dated by Sprockhoff to the earlier period (1954, 73).

A later form of Herzsprung shield is dated to Montelius V in the Skydebjerg hoard (Albrechtsen Fynske Mindes I, 73, fig, 1, 5). The Herzsprung shield thus appears at the Reinecke D - Early Hallstatt A transition and persists at least into Montelius V and Late Urnfield (Hallstatt B) times.

There are no bronze Herzsprung shields in Britain, but, as stated, two wooden U-type shields have been found in Ireland. The Annadale shield has a large central boss surrounded by seven ribs all with U-shaped indentation, set in pairs except for the outside rib (Sprockhoff, 1930, taf. 36). The Cloonlara shield also has a large boss and four indented ribs set well in from the edge of the shield which itself is indented, a feature repeated at Annadale (Hencken, 1951, pl. vii, 2).

These Irish Herzsprung shields resemble the less elaborate examples of the type in Northern Europe, but the rendering in wood probably excluded any sort of elaborate decoration such as bosses. Probably the idea of the Herzsprung U-type shield was brought to Ireland with other Scandinavian objects of Montelius V, such as sunflower pin and amber.

The occurrence in Ireland of the V-type of Herzsprung shield must now be taken to represent the development of a variant of the earlier U-type. This development, on the periphery of the normal Herzsprung shield type, also appears in Spanish rock carvings and, more surprisingly, in the east Mediterranean (Sprockhoff 1954, abb 3, 3).

Hencken dates the V-type in these Greek lands to the eighth and seventh centuries B.C., but the exact manner of connection between this area and Ireland is unknown. Possibly the development of Atlantic cauldrons may account for this contact, however indirect it may have been. There must also be some connection between Ireland and Iberia, in view of the resemblance of the Irish V shields to the Spanish carvings (Sprockhoff 1930, taf. 3a and 7c).

The shield from Clonbrin shows the use of both ribs and bosses on leather. A central boss is surrounded by three ribs, the innermost of penannular form, the other two with pronounced V-shaped indentation. Four groups of three bosses lie between each rib and its neighbour. A leather handle is laced on to the back, suggesting that the shield was complete in leather with no strengthening upon the back.

A second Irish find, from Churchfield, Co. Mayo, appears to be a wooden form for a leather shield which would consist of the same three rings surrounding a central boss, two with V-notch and the other penannular (O'Riordan, 1946, pl xiv, 2). Another wooden mould, from Kilmahamogue, Co. Antrim, has only two concentric channels (UJA, xiv, 1951, 62). Both U- and V-type shields, and the Pilsen find, comprise Sprockhoff's Herzsprung shield type and this, with the earlier Nipperwiese type, make up all the North European forms except for the shields in the Sorup Mose, Eskildstrup, find.

The shields in this hoard are a Yetholm-like shield, and a Sorup type shield; the importance of the find is that Sorup is practically the only useful dating association for the British Yetholm and related shields. This is dependent upon the boss technique of the

Sorup shield, which has been studied recently by von Merhart (1952, 38).

Briefly, he distinguishes three styles of boss-work, the Gleichbuckel, using bosses all of the same size and seen in Early Urnfield times, the Punktbuckel, using bosses of two sizes as seen on Kirkendrup cups and dated to Late Urnfield by von Merhart, and the Leistenbuckel using bosses and ribs and dated mainly to Montelius V and VI.

While the Yetholm-type shield is stylistically not represented by any of these Continental techniques, the Sorup shield is distinctly worked in the Punktbuckel technique. However, the dating of this style to the Late Urnfield, based on Kirkendrup cups, is now under question. Rather than Hallstatt B and Montelius V, the chronological position of the Jensovice-Kirkendrup cup appears to lie in late Hallstatt A or Montelius IV in Northern Europe (Sprockhoff, 1930, 88). The Punktbuckel style occurs on late Hallstatt A bronze work with Montelius IV objects at Pfeffingen, Wurttemberg (Behrens, 1916, 32-abb 10), and therefore the Sorup find may be assigned to this period.

The shield itself has a central boss surrounded by rows of large bosses, thin ribs and tiny bosses in an intricate pattern. From this central concentric decoration four ornamental lines extend out to the circumference of the shield. These lines are composed of similar arrangements of alternating large and small bosses. The circumference of the shield also is decorated in Punktbuckel style. Four small loops are attached to the edge of the shield, at the terminals of the radial decoration, and the handle is fastened across the inside

of the central boss by six rivets.

If the dating of the Punktbuckel style is secure enough, this means that the Yetholm-type shield, a somewhat atypical example of which was found with the Sœrup shield, appeared in Britain well before the arrival of the prototypes of the Irish-British bucket and Atlantic cauldron. The distributions of shields and these other beaten bronze objects are completely dissimilar, there being only three bronze shields from Ireland and nearly three dozen from Britain, mainly easterly, while buckets are equally divided and cauldrons predominantly Irish (shield map 17 ; Hawkes 1957, 145, 182).

The suggestion is that the leather and wooden Herzsprung shields were produced in Ireland as a result of influence arriving from the continent at the same time as Kurd buckets. This of course makes the earlier Nipperwiese type of Northern Europe the only source of inspiration for the British types of shields as listed by Sprockhoff.

In Britain the lack of associated finds makes the problem difficult to resolve, for of Sprockhoff's list (1930, 17), only one of the British and Irish finds can be considered as of any value. The association of shield and protected-loop spearhead at Langwood Fen, Cambs., has often been dismissed as unproven, but the original accounts (see Fox, 1923, 60) are satisfactory and the opinion has recently been expressed that the closed nature of the find is not in doubt. The spearhead is however a late version of its class and can be assigned without much difficulty to the earlier part of the Late Bronze Age. The shield may be considered as showing some early features, described below, which aids in placing the find without much doubt in the early

Late Bronze Age. It can hardly be considered as late as Scottish LBA3, contemporary with Montelius V and Late Urnfields.

Other reported associations with British shields are unproven and unacceptable. The Brumby, Lincs., shield has on occasion been linked with a basal-looped spearhead, and the small Athenry shield was found with a spearhead now of unascertainable nature.

Hodges proposes three stages in the development of bronze shields in the British Isles (1956, 44). The prototype for the earliest bronze shield, it is suggested, is a wooden plate with a series of studs on the face. Noting that the smallest bronze shields generally have only one or two rings of medium-sized bosses, while the larger shields have multiple rings, he assumes that the small shields are the earliest as standing closest to the wooden prototype, and evolution resulted in larger shields with smaller bosses. However Cloonlara, a U-type Herzsprung shield, is 19" in diameter, and Clonbrin, a V-type, has only a few large-sized stud imprints.

Stage 1 contains small shields with one or two rings of medium-sized studs or bosses. The Eynsham shield has a single row of bosses and is under 10" in diameter (Kemble, 1863, pl. xi, 3), while Athenry and Dorchester have two rows of bosses separated by a rib, and are 14" and 13" in diameter, respectively (ibid pl. xi, 1-2). These shields belong to Sprockhoff's London-type (1930, 3-4, taf 2b). Although a rock engraving of a shield of this form occurs in Sweden, no suitable prototype exists for the London type in Northern Europe, the Nipperwiese and Pilsen shields lacking bosses completely.

The invocation of von Merhart's boss styles may be

considered here in relation to these small shields; each, except one, has bosses all of the same size, and thus belongs typologically to his Gleichbuckel style of Early Urnfield date. But these London-type shields also have ribs separating the boss rows, and this combination is more suggestive of the Leistenbuckel style of Montelius V and VI.

But another consideration should be examined here, that these small shields, diameters 9¼", 13½", 14", are related in some way to decorative objects such as phalerae. The bossed phalerae of Late Urnfield times show considerable similarities to these small shields (von Merhart, 1956, 28-). In addition to the double-levelled bosses seen on some shields and some phalerae (ibid abb 5, 6), the decoration of other phalerae is duplicated as shield patterns, including that of the small London-type (Sprockhoff, 1930, taf. 2b; von Merhart op. cit. abb 1, 4), and others (e.g. Broholm DB iii M24; von Merhart op. cit. abb 1, 8).

Hodges' second stage consists of large shields, diameter over 20", with 4-6 rings of bosses. A shield from London has four concentric rows of large studs, separated by ribs (Sprockhoff, 1930, taf. 2e), and one from Lough Gur possesses six rings of studs (Hodges 1956, 44; same shield as Ballynamoma, Evans 1881, 352). This is matched in a shield from Ingoe, Northumberland (Cat. Alnwick Cas. 1880 pl. xviia, 3).

Included in Stage 2 are the Harlech-type shields, which have six or more ribs plus a rounded edge but which lack bosses of any sort (Evans 1881, fig. 429). The shield from the Lea Valley with ten ribs presumably falls into this stage although it is excluded by

definition from Stage 2 (4-6 rings) and Stage 3 (12 or more rings).

This third stage is composed of shields having multiple rings and bosses and includes the most common British shield, the Yetholm type. But before discussing these, the Harlech type of shield must be examined more closely. This has a simple central boss surrounded by a number of concentric ribs, from six to ten. There are no bosses.

In form the Harlech shields are matched, although in somewhat simpler style, at Nipperwiese and other shields of this continental type (Sprockhoff, 1954, abb 21,map ; 1930 taf. 1). This as described is dated to Early Urnfields and has a central boss and two concentric ribs as well as a rolled rim; the rim is matched on Harlech shields but not on the small London-type. The rivet arrangement for handle and tabs is similar on all these types.

It is clear that a simple multiplication of ribs would produce the Harlech-type, without the need for any boss-work. The distribution of these and other shields is primarily eastern, and the absence of bronze shields in Ireland is puzzling in view of the normally accepted view that Ireland was the home of beaten bronze work in the Late Bronze Age (map 17). Savory suggests that the Irish feature of beaten bronze work explains the western find-spots of Welsh shields, although these appear to be English types (1958, 39). The invocation of sea routes, from southern Scotland down the Irish Channel "at a late date" hardly stands up to serious examination with regard to shield distributions.

Typologically, the Harlech-type shield is the only

British form with a reasonable prototype on the continent. It appears highly unlikely that any British shields antedate the Nipperwiese type, which are here considered as the source for the British Harlech shields and through them for the other British types.

The time gap between these two types cannot be determined precisely but need not be inordinantly great if Nipperwiese is Early Urnfields and Harlech is early in the British Late Bronze Age. If this typological comparison is acceptable, then the earliest British shields should have fewer ribs than later examples, and here the shield from Harlech comes first. A non-socketed sickle of Class IA, a stray from the Thames, also comes from this North Welsh area, possibly suggesting an early cross-country route, perhaps leading to Ireland.

Sprockhoff's London-type shields, those of Hodges' Stage 1 and some of his Stage 2, have as their characteristic feature concentric rows, usually under seven in number, of medium-sized bosses, the rows separated by ribs. Considerable variation exists in this type, and while some of these shields may be connected to the Harlech-type, others are not at all close in form.

The simple addition of bosses to a Harlech shield results in a London-type such as the Thames shield (Sprockhoff, 1930, taf. 2e), while the addition of bosses to a multi-ribbed Harlech type, as the Lea Valley example, produces a Yetholm-type (ibid taf. 2f). These typological developments are reasonable and presumably took place in the south of Britain, as shown by distribution and by the Yetholm development detailed below.

The derivation of these British types from the Harlech-

type shield does not account, however, for the small London-type shields with only two ribs and rows of bosses. Possibly the relationship with bossed phalerae can explain away this difficulty, as the London-type shields of small size are distinctly different from the larger British types.

The most common British shield is the Yetholm-type. This is generally over 21" in diameter, but ranges from 18" at Langwood to 27½" at Achmaleddie, and has a central boss surrounded by multiple concentric ribs alternating with rows of small bosses, ranging from eleven sets in the south to thirty in the north.

While the closest of von Merhart's boss-work styles to these shields is the Leistenbuckel, the analogy is not sufficiently exact to enable its use as a chronological guide to the position of the Yetholm type.

The Yetholm shield is a common British type, but examples also occur in Denmark. A shield from Lommelev Mose has the general appearance of a Yetholm-type while differing in some details (Broholm DO iv, 106). The small bosses occur in double rows between the ribs, and are not continuous but form groups. In addition, the rows of bosses and ribs do not extend quite to the circumference which is marked by a line of bosses. Nevertheless the Lommelev shield is predominantly of Yetholm-type, and has been assigned to Montelius IV by Broholm.

A shield even closer to the Yetholm-type occurs in the Sorup Mose hoard (Broholm, DB iii 181, 184 M24). This shield has seven concentric ribs alternating with rows of small bosses, not as minute as those on Yetholm shields, but not even approaching the boss-size

of London shields. The Irish shield from Lough Gur is fairly close in form to the Sorup find.

Actually, both the Sorup and Lough Gur shields could as well fit into the London-type, and presumably these could be intermediate forms, between the Yetholm and London types (cf. Broholm DB iii M24 and Sprockhoff 1930, taf. 2e). Harlech then would have developed in two directions, the normal form (Evans 1881, fig. 429) evolving into Hodges' Stage 2 shields with about six ribs alternating with large bosses (Sprockhoff, op. cit. taf. 2e), and a larger Harlech form with multiple ribs (ibid. taf. 2d) as base for the Yetholm shield (Evans 1881, fig. 435).

The shield from the river Trent, Notts., has corrugations rather than distinct ribs as in the Harlech-type, and appears to represent a purely local divergence from the plain ribbing effect of the Harlech-type Lea Valley shield and the multiple ribbing of the Yetholm-type. The Trent River shield has 22 corrugations, while the Brumby Common, Lincs., shield has about 60 such corrugations (Ant. J xxx, 1950 195, pl xxx; Smith 1919 145-). Smith believed that the Achmaleddie shield was of the corrugated type, as well as one of the Ingoe shields, but neither of these belong here. The Trent-type then appears to be of purely local inspiration as shown by the map.

Only two examples of Sprockhoff's Coveney-type shields have been found, one from the type site near Ely, Cambs., the other from Achmaleddie, Aberdeenshire, both occurring in association with shields of other types. The Coveney shield has a central boss surrounded by a rib, then a two-ribbed meander pattern, a second concentric rib and

a rolled rim (Evans 1881, fig. 430; CAS quarto xiv, 1848, vol. ii Misc. pl. 3). The Achmaleddie shield is similar except that the meander pattern is made up of four ribs, two continuous and two ending in points; these are not interlocked as the two ribs on the Coveney shield are.

The symmetrical meander pattern on these two shields occurs on some continental objects mainly limited to Northern Europe. These are dated to Montelius IV and V, the main period for the style being the latter phase (Montelius 1922, 1122, 1228, 1346, 1306; Broholm DO iv, fig. 44, 96, 130, 147; see also Auh V iii, 1881, xii taf. 2, 1; P.Z. xiii-xiv, 1921-22, 123, abb. 39). The general style appears in central France in early Hallstatt B or its equivalents, on pottery in particular. The decorative sequence for pottery is well established for Hallstatt B and, in brief, is composed of herring-bone enclosures and symmetrical meanders in the early stages, replacing the Early Urnfield style of concentric arcs and comb decoration (Vogt 1942, 193; Vogt 1950; Gersbach 1951; Müller-Karpe 1948; Sprockhoff 1950). This early Hallstatt B ornamentation lasted only until a simpler style replaced it in late Hallstatt B, and the bronze work of these periods naturally reflects the stylistic ideas seen on the pottery of the appropriate phases.

The British shields bearing this symmetrical meander pattern can thus be fairly confidently dated to early Hallstatt B, or near the transition Montelius IV - V. A Yetholm-type shield was found with the Achmaleddie shield and this find therefore may be employed to provide a date at least in the life of the essentially British

Yetholm-type (Sprockhoff 1930, 12, map taf. 8 and 1954, map abb. 21 lists three shields from Achmaleddie; there are only two).

We have seen that the stylistic character of the Sorup shield and its associated Yetholm-like shield, and Lommelev, supply a date of Montelius IV for a form related to the true Yetholm-type. Although Savory and Hodges date the Yetholm shields not earlier than 700 B.C., this earlier dating seems to fit both associations and continental comparable material, and there is no evidence to necessitate a later dating. The suggested date then lies near the end of Montelius IV, possibly in early V for the north British examples, possibly even in the early eighth century B.C.

Three finds in Britain have linked shields of different types. Ingoe, Northumberland, is now seen to have yielded a London-type and a Harlech-type shield, not two Yetholm-types as other authorities report. Coveney Fen, Cambs., has a Harlech and a Coveney shield, and Achmaleddie, Aberdeenshire, links Coveney and Yetholm-types. Clearly all the British shield types are roughly contemporary.

Langwood Fen shows an early association for the Yetholm-type, continental Yetholm-related shields are early, and the only continental prototype, the Nipperwiese-type, is also dated well before the generally accepted horizon for these shields.

When the British Yetholm shields are arranged in a typological sequence, based upon the number of concentric ribs and rows of bosses, the first five shields, with 11 to 13 ribs, all come from the south of England. The next two shields, with 19 and 20 ribs, were found in Lincs. and Wales, and the major group, with 24 to 30 ribs,

are all from the Highland Zone, two Welsh and the rest northern England and Scotland.

The suggestion must be that the Nipperwiese shield influenced or led to the production of the Harlech-type which may be dated by association with Yetholm to Montelius IV. The major group of Yetholm shields, from the north, may be somewhat later, possibly in the ninth or early eighth century B.C.

The question of function has not been mentioned although several writers have remarked on the fragile nature of beaten bronze shields. These seem on the surface to be entirely too thin to have been of much protective use in fighting, although some have been found with cut-marks or holes. The leather shield from Ireland does not appear to have had a supporting backing.

The Beith hoard of five or six shields was found with the shields arranged in a circle and set vertically in the earth. This suggests that the shields were of some ceremonial significance, votive perhaps. The Ingoe shields were also found in a vertical position, as was the single Harlech shield. The possibility then must be considered that some, if not all, of British bronze shields are ceremonial; the cuts or holes then could represent the ceremonial killing of the object. Another possibility is that the Beith shields were set around a grave, but no records exist to support this.

The absence with these shields of other votive accompaniments is puzzling, but of course the shields may have been the only objects of a non-useful nature, and would therefore be the only objects discarded in this way, the others reverting to their more normal use. Wooden shields may fall into the truly defensive category.

TRUMPETS

The major work on Irish trumpets lies in MacWhite's study of 1945, but more recent discussion by Hencken (1951, 60-) and a summary by Hodges (1956, 43) should be noted.

MacWhite divides the ninety-odd Irish trumpets into two major groups, A, either plain or with incised or moulded decoration, and B, decorated with conical rivets. Within each group various types exist which need not be considered here, except to state that side-blow trumpets occur in both groups. A third group, A-B, shows influence of B decoration upon A-form trumpets.

MacWhite's table of trumpet associations on the whole supports his contention that the grouping proposed has some significance. Of twelve finds of two or more trumpets, three consist of A trumpets alone, seven of B alone, one of A-B, and one (Dowris) of all three forms (1945, 88).

The distribution of the groups also tends to confirm the typology; Group A occurs mainly in the north-east, Group B is restricted to the south-west, and the hybrid trumpets lie in central Ireland. Two Irish-type trumpets are recorded from Britain, a Group A example from Battle, Sussex, (Curwen 1954 205), and a fragment from Innermessan, Inch, Wigtownshire (PSAS xxiii, 1888-89, 224). This is a side-blow trumpet with moulded mouth, and MacWhite regards this as a local Scottish production, based on Irish models. The slightly raised mouthpiece occurs on A-B trumpets and on one A trumpet, but the Scottish example is more pronounced in this respect.

There is also an unprovenanced side-blow trumpet

illustrated in the Alnwick Castle Cat. of Antiquities (1880, 84) which may be other than Irish.

MacWhite's typological and distributional groups are accepted by Hencken, but his chronological studies are not. Before discussing this, a brief summary of Scandinavian lur typology and chronology will be found useful.

The most recent work on Scandinavian lur, by Oldeberg (1947), is based upon studies made by authorities who approached their work from the musical side, and others who employed typological methods including Hahne (1915) and Schmidt (1915); Oldeberg's work is to a great extent a recapitulation of these former studies.

Group A lurs, the earliest, are the smallest and are cast in segments but attached permanently by meander joints. They are wide in diameter, and approximate the cow horn; the flanged mouthpiece and sound disc is cast with the tube and the decoration consists of narrow raised bands. Group A is dated by Oldeberg to Montelius III.

Group B lurs are larger and more curved, and are formed of two pieces, tube and bell, detachable for ease in transport presumably; these fitted together in various ingenious ways and each part was cast in several segments first as in Group A, then permanently joined. The sound discs may have punched or cast ornament, and were cast separately before being pressed or cast on the tube. A conical low-flanged mouthpiece is attached to the tube which in evolved cases has rattleplates. Groups of raised bands, as before, provide the decoration for this group which is dated to Montelius IV.

Group C lurs, of Montelius V, are the largest and are

sharply curved. The tube and bell are separate with triangular catch, and as before both parts were cast in pieces and permanently joined into the sections. The sound disc is large and decorated in the same manner as before. A cup-like mouthpiece has an overlapped flange, and the joints may be outlined in addition to the spiral or ring raised decoration.

The typology of Irish trumpets suggests to MacWhite that Scandinavian influence is evident in Group A trumpets but that Group B trumpets are purely local. These latter may have their prototype in a cow's horn, without (B_1) or with (B2) the addition of a further tube. Of Group A, it appears that A_2 trumpets could have been evolved from A_1 examples by the addition of a cast-on mouthpiece.

But A2 trumpets are somewhat similar to Scandinavian lurs in their curved profile, fixed mouthpiece and loops. However the Irish trumpets are not twisted and lack the disc at the bell end. The suggestion is that Scandinavian lurs lie behind the development of the Irish Group A trumpets, with A2 slightly earlier than A1 which is an Irish devolution.

If Group A is earlier than Group B, for which reasons are given below, then the B trumpets represent a native reaction to the introduction of A trumpets, in transforming the local cow's horn trumpet into a bronze instrument.

Two types of incised ornament occur on trumpets of Group A, either a double band of parallel lines or three bands with a zigzag line between each band. The first style is too common to be of any

chronological importance, but MacWhite's statement that the second style is only occasionally seen in Central and Northern Europe, and is rare in the West, needs some examination.

Actually it occurs, alternating with bands of parallel lines, on bronze shaft-hole axes as early as Montelius I in Sweden (Montelius 1922, 811) and another version is seen on penannular bracelets of the same date (844). The zigzag line with straight lines bordering appears in succeeding periods, in Montelius II particularly (892, 860, 913, 906), and survives into the Late Bronze Age although in less pronounced forms (1116, 1121, Montelius IV; 1274, 1312, Montelius V; 1462, Montelius VI).

In Denmark the zigzag and parallel-line motif occurs in Periods I and II (Broholm DO iii, No. 20, 15, 119, 120, 136, 142), developing into herringbone or criss-cross pattern in Montelius III (No. 291-292), and hardly appears again in the later periods. While MacWhite claims that this motif does not appear on Scandinavian lurs, an enclosed zigzag line does occur on the disc of a lur of Montelius IV, both around the bell and around the edge of the disc (Broholm DO iv, 103a). The style also appears in Central Europe on many objects, including cross-handled bowls (von Merhart 1952, taf. 1, 8; also Kimmig 1940, taf, 34, 1, Reichenau Urnfield pot).

The decoration of trumpets of Group B consists of conical spikes, derived from conical-headed rivets. MacWhite believes that these were brought to Central Europe from Italy and dates their arrival in Ireland as not earlier than 600 B.C. However it now seems clear that Central Europe is the home of these conical rivets, where they emerged

from the smaller rivets of Late Urnfield times, those with cone-shaped heads seen on Fuchstadt beaten bronze cups (Sprockhoff 1930, 67, taf. 13b) and on the Dowris Kurd bucket (Hawkes 1957, 135-136), and as decorative projections on bronze vessels of Late Urnfield and Hallstatt C date (von Merhart 1952, e.g. taf. 14, 15, 24, 25).

The conical-headed rivet, then, reached the north of Europe in Late Urnfield or Montelius V, about the eighth century B.C. (ibid taf. 24, 1-3). The fashion reached Italy from Central Europe and is dated there by Hencken from about 750 B.C. (Hencken 1951, 57). From Scandinavia the conical-headed rivet may have travelled to Ireland where it occurs on Class B cauldrons and as spikes on Group B trumpets.

The amber trade and concentric ornament probably evidence the same influence at this time, not from 600 B.C. onwards, as MacWhite affirms, but nearer 700 as bucket - cauldron chronology shows.

Approaching this dating question from Ireland, the associations in the Booleybrien, Co. Clare, hoard show bag axes, a sun-flower pin with concentric decoration and eleven chain-links, with a Group B trumpet and other objects. The chain-links are of Late Urnfield or Hallstatt C form and are comparable to the links in the Braes of Gight, Aberdeenshire, hoard which are dated to 700 B.C. (Déchelette ii, 1913, 654, fig. 251). The Group B trumpet and sunflower pin show North European influence of Montelius V date, in the seventh century.

The Dowris hoard, with trumpets of all three groups, is also dated to the seventh century by its bucket and cauldron, not to 400 B.C. as MacWhite states.

Turning now to the question of the origin of the Irish trumpets, MacWhite suggests that Scandinavian lurs inspired the

development of Group A trumpets. These lurs appear in Denmark from Period III to the last phase of the Bronze Age (Broholm DO iii, 338; DO iv, 102-103, 198-203, 310), and are similarly dated in Sweden (Montelius 1922, fig. 1236-1239).

MacWhite suggests that the lur tradition was dying out in the North by the end of the Bronze Age, and therefore the inspiration for Group A Irish trumpets must have occurred before Period VI. He correlates his Irish Bronze Age B with Period VI (1944a, 124), and as he dates Group B trumpets to Bronze Age B, therefore Group A precedes Group B and arrived probably in Period V.

But it has been demonstrated that Group B decoration arrived in Scandinavia in Period V, and appeared in Ireland in the seventh century at Dowris. As Bronze Age B cannot be extended back this far, and as phase A_2 is placed at 700 (MacWhite 1944b), it seems that Group B trumpets fall into this earlier period of the Irish Late Bronze Age, and are not "securely dated" to Bronze Age B, and presumably this applies to sun pins and disc-headed pins as well. It therefore appears that these phases in the Irish Late Bronze Age should not be employed in this context.

The following facts have now been more or less established: Scandinavian lurs appear as early as Period III, conical-headed rivets reached Ireland in Period V and appear on Group B trumpets, Scandinavian lurs are reasonably close in form to Group A trumpets, the decorative motif of Group A appears in Period II, primarily, in Scandinavia, the Group B trumpet probably had its origin in a cow's horn

but was flourishing in Late Urnfield - Hallstatt times sometime around the seventh century.

The important point to establish is whether or not the lur in its more evolved form is close enough to the Irish Group A trumpet to allow an origin from the North. MacWhite suggests that Period V as a convenient initial date for the Irish instrument, and it is here that Hencken disagrees.

The evolved Scandinavian lurs do not, according to Hencken, resemble the Irish type (Brondsted 1939 170, fig. 155 of Period IV), and a closer match is obtained in lurs of Period III, the first Northern trumpets, dated here because of their resemblance to the Kivik cist decoration (ibid 115-117, fig. 105-106). Brondsted like other investigators, considers the Wismar horn as the forerunner of the lur (Auh V IV 1900, taf. 33, 3). During Period III true lurs appear, and those from Paarp, Rorlykke and Gullakra, are dated to this time. These retain the animal horn basis, but yet are emancipated from any strict rigidity that the organic form might have inspired. Paarp is related by Brondsted to the Kivik carvings.

One of these early lurs is extremely close to the organic horn (Brondsted 1939, fig. 105), and the Wismar horn could easily be included in MacWhite's native series developed from the cow's horn, except of course for the absence of spikes on Wismar. The simple motif of Group A trumpets appears on the Wismar horn, which is dated to Period II or II/III. The Langeland trumpets already noted (fig. 105-106) and of Period III are closer in form to the Irish instruments, the resemblances of these lurs to Group A trumpets at Scrabby Bog and

Dromabest being especially close (MacWhite 1945, pl. xiv, 7; pl. xvii, 1). Both trumpets have the simple decorative motif as seen on the early Wismar horn.

The true lurs of Period IV compared with the more evolved Group A trumpets show similarities in their curved profile, fixed mouthpiece and loops (e.g. compare Maltback, Brondsted op. cit. fig. 155 and Carraconway, MacWhite op. cit. fig. 46). The differences are equally as impressive however in the Irish trumpets' lack of both twist and bell disc and in the much more open S-curve and different decoration. And the trumpets from Brudevaelte, Zealand, of even more evolved form in bell disc and pendants are farther removed; this and other examples date to Period V (Oldeberg's Group C; Broholm DOiii, 199-200).

One of the Langeland lurs has a narrow bell disc and less exaggerated twist and curve, and illustrates the direction in which elaborations occurred in the succeeding Period IV and V. The decoration on this lur is of the simple motif appearing on Group A Irish trumpets, and this, with the lur's greater similarity to Group A than the later lurs possess, suggests that the Irish Group A trumpets were inspired by Scandinavian lurs of this early date, Period III. This confirms the opinion that Group A preceded Group B, but by a different argument.

Of importance here is the fact that the early Northern lurs are not dated with absolute certainty to this Period III, although Hencken suggests that as fragments of evolved lurs occur in hoards of Period V, therefore these may have been manufactured in IV, and therefore primitive lurs may be of Period III. One of the Langeland lurs is reasonably close in form to the later more evolved lurs, suggesting

that Period III may be somewhat too early a date for the first lurs.

If then Group A Irish trumpets have their origin in Scandinavian lurs of Period III or possibly early IV, the date of their appearance in Ireland may lie in the tenth or eleventh century B.C. which seems extremely early.

Hodges prefers MacWhite's correlation with Montelius V, basing this partly on the similar distributions of Group A trumpets and sunflower pins (MacWhite 1945, fig. 2; Hodges 1956, fig. 5). However the distributions are not at all similar, especially as Hodges' map is not limited to sunflower pins, and this does not seem to be any confirmation of the theory.

Typologically the relationship between Scandinavian and Irish trumpets lies in Period III or IV rather than Period V. However the conical spikes of Group B trumpets seem clearly linked to the seventh century and Period V, and this presents a chronological gap between A and B trumpets difficult to understand. The distribution of A and B trumpets is complementary, but that of B trumpets and Class B cauldrons is not, and both types of course possess conical-headed rivets. The only association of A and B trumpets, with hybrid A-B as well, is at Dowris which is dated by its Kurd bucket and B1 cauldrons to the mid-seventh century.

If Dowris is a truly associated find (Hodges 1957, 52), then the contemporaneous use of A and B trumpets is clearly proven and suggests that Scandinavian influence occurred in Period V, disregarding the typological difficulties.

The problem is not capable of resolution at this time but possibly the following occurred. The organic horn provided the

first inspiration for bronze trumpets in both areas (MacWhite, 1945 90; Brondsted 1939, 61), and these developed independently in each area until a basic form and style was established sometime before the main period of contact in the seventh century or later Montelius V. At this time of Northern influence, Scandinavian decoration including the use of conical-headed rivets was adopted in Ireland without however seriously affecting the Irish trumpet form although Group A trumpets reflect some slight Northern influence in form and Group B in rivet decoration.

The main period of these trumpets must lie in Period V, in the seventh century B.C.

BUCKETS AND CAULDRONS

The basis for discussion of Scottish buckets and cauldrons lies in two articles, by Leeds in 1930 and by Hawkes and Smith in 1957. A discussion of wooden cauldrons by Hodges should also be noted (1957 57).

With the recognition by Hawkes of two buckets of Kurd-Eimer form, from Nannau and Dowris, differing from the native form principally in their riveted sheet-metal ring-carriers, it is now clear that the bronze buckets of Britain and Ireland arose from the importation of this continental form which is dated by von Merhart to the last stage of the Urnfields. Two Irish buckets of Kurd-Eimer form but with secondary cast staples support this derivation from the continental form of Irish-British buckets which must have had their centre of production in Ireland.

The use of cast bronze staples, externally ribbed, and placed on the inside of the rim so that their rings fall inwards is the most characteristic feature of Irish-British buckets. The technique of working bronze into large sheets appeared in Ireland at this time, around 700 B.C., and the continental (e.g. Skocijan) angle-plates seen on several Irish-British buckets shows the direct contact with continental ideas that must have existed in Ireland at the beginning of the seventh century. One or two transitional models probably date to the late eighth century.

True Irish-British buckets have many features copied from their continental prototypes. The bucket is formed of three bronze sheets, one forming a high-walled base, the other two riveted vertically together and attached to the base. The rim is strengthened by the

addition of a bronze wire around which the upper margin of the sheets is folded. Base plates are commoner than on continental buckets, and ring handles are also more frequent.

The primary feature is the purely native cast bronze staples, composed of a ring and holder which is cast onto the bucket. The ring from Duddingston Loch rests in a three-ribbed holder and is considerably smaller than that from Flanders Moss. The staple too is simpler, with a plain rectangular bar extending down on each side of the holder. This staple provides an example of the difficulty of casting a heavy ring and holder on to a thin bronze sheet no matter how corrugated it may be for strengthening.

In this case the two bars of the staple meet and join, and only in one place can a trace of the bronze sheet be detected. The staple bars, during the casting process, melted the sheet and presumably the ring and its mount fell through the vessel when the mould frame was removed.

The other Scottish example of a bronze bucket comes from Flanders Moss, Cardross, and is complete. The rings ride in seven-ribbed staples unlike the Duddingston Loch ring. The Flanders bucket stands 19" high, over 2" higher than the Heathery Burn bucket. The diameter at base is 10", at shoulder 16", at mouth 14". The upper body is formed from two sheets of bronze riveted together vertically with external washers. Some cracks in the body have been repaired by riveting after pulling the edges together and by the addition of small bronze sheets underneath.

At the top the sheets are folded inwards to form an angular shoulder with convex upper surface, then recurved at the neck

to form an everted rim. The lip is curved around a bronze strengthening wire. These upper sheets are riveted horizontally to the base sheet which forms the lower wall to a height of 6". The base, of 10" diameter, is hammered up in the interior to form a circular foot upon which is riveted a wheel-shaped plate with four spokes, a one-piece casting, attached by five rivets, one at the centre of the spokes, and one at each end of the spokes in the centre of the wheel-band. This is $1\frac{1}{2}$" wide and has a 1" flange at the edge to protect the angle of the bucket base.

The spokes of this wheel-base are over 1" in width and are ornamented with four raised parallel lines meeting a square at the centre, and the ring itself has four depressed lines running in line with the circumference.

The two handle staples are cast on to the inner surface of the rim and have seven ribs. Each staple has a short bar that runs from the lip down and inwards to the neck angle, and thence out as a thick but narrower strap on to the shoulder. On the inside of the neck the holder runs as a strap outwards and down, under the shoulder only, the space for the ring clearing the neck angle. From each staple a cast ring falls inwards, squarish in section and $3\frac{3}{4}$" in diameter. The technique of manufacture of buckets of this type has been described by Maryon (Hawkes, op. cit. 151).

This Cardross bucket lies close in form to the Heathery Burn bucket, and these both may be considered as the latest buckets in the native series, based principally on their one-piece wheel-shaped base-plates. In this series, the earliest buckets are those with multiple angle-plates, a continental form, then come those with similar

T-shaped plates but joined to form a sort of wheel, then the elaborate one-piece wheel-plates.

As the Kurd-Eimer seen in Britain and Ireland are of Late Urnfield date, and as the latest of the native buckets, at Heathery Burn, is associated with horse and cart gear of this Late Urnfield date with no evidence of Hallstatt C influence, then the British buckets may be dated to the first half of the seventh century and hardly later in view of the penetration of Hallstatt objects in this area around the mid-seventh century.

The bucket base angle-plates in the Minnis Bay, Kent, hoard are similar to those on the Skocijan and Dowris buckets, and must represent a bucket, presumably an earlier one than Cardross and Heathery Burn. The reeded staple is considered by Hawkes to be a part of a B1 cauldron, but it seems more plausible to consider this as a part of the bucket (Worsfold 1943, pl. X11, 61-67 and 37).

The primary theme of Leeds' paper in 1930 was the cauldron and his classifications still remain the basis of later work. Mahr (1934) and Fox (1939a) also studied Irish and British cauldrons and Hawkes and Smith (1957) have now provided a comprehensive discussion.

Leeds divided cauldrons into two classes. Class A has a short neck with two or more horizontal corrugations, and the rim above is bent out and then horizontally inwards to form a broad flat top, the inner edge of which is turned down and rolled under around a bronze wire. The rings are normally circular in cross-section.

Class B cauldrons have an everted rim and the neck below is reduced to a mere angle separating the body from the outward-slanting rim. These two main classes can be further subdivided depending upon

upon the relation of the ring-handles to the rim top.

Class A1 has rings riding free between the cast staple loops and the rim top, Class A2 has the staples braced across the rim top by transverse bars on each side of the loops, and Class A3 has continuous bracing so that the ring has no contact with the rim top. Class B1 cauldrons have simpler staples than Class B2 in which the staples have exaggerated flanges and are not cast-on but attached by lug-and-loop or rivet-rod devices.

Hawkes shows that the Greek dinos of the eighth century B.C. is the prototype of Atlantic cauldrons, but lacks the neck corrugation and the wire-strengthening of the British and Irish type. This latter feature is common to both continental and Irish-British buckets, which are broadly contemporary with most of the cauldrons as shown by the British change-over to cast staples from sheet bronze ring-holders, these cast staples being identical with those of Class A and simpler Class B1 cauldrons. As these came to the cauldrons from their Mediterranean prototypes, they obviously were transferred to the buckets from the cauldrons. And the rim-wiring of the buckets was transferred to the cauldrons in return, as well as corrugation.

The first Atlantic cauldrons, Class A, are shown by Hawkes to have been first manufactured towards 700 B.C., and Class B might have appeared near 650 B.C., because after this date the Mediterranean prototype diverged considerably and no close forms are known from the last part of the seventh century.

Distributions suggest that these cauldrons of British or Irish type were probably produced in Ireland, but are found as far south as Spain, hence the name Atlantic cauldrons.

The first Atlantic cauldrons retain the spheroid body, rim and handles of the Mediterranean prototype. A one-piece body was too difficult to render, so riveted sheets were employed. This, along with the wire-rolled lip, is characteristic of continental Kurd-Eimer rather than of Mediterranean cauldrons. The corrugation of the neck is also borrowed from this source, as may be the high-shouldered conoid shape rather than the spheroid form.

The Irish-British manufacture of early cauldrons and buckets must be contemporary and follow directly the arrival of the suitable prototypes. The Kurd bucket and Mediterranean cauldron both date after c 750 B.C. and toward 700 B.C., and thus a date around 700 for the British-Irish production is reasonably secure.

One cauldron of the earliest class, A1, has been found in Scotland, and comes from Darnhall, Eddleston, Peebles. This cauldron is made from three sheets of light-coloured bronze, two being riveted together to form the top part, the third piece rounded and forming the base of the vessel riveted to the upper section.

The cauldron weighs 5 lbs 10 oz, and has a maximum circumference of 5' 9½", and height of 15½". The bronze is thickest at the base of the vessel, as this sheet has been hammered out from the centre rather than inwards from the edge. From the base of the upper sheets the bronze curves out and upwards to a high shoulder, then bends abruptly inwards to form a sharply curved shoulder. The sheets then rise vertically in a series of three corrugations forming a neck about 2" high.

From this point the bronze sheet is bent out and upwards

to form the outer edge of the rim, then curves over and runs horizontally inwards for 1½" before turning under to complete the rounded inner lip. The rim, neck and shoulder bear transverse hammered striations. The diameter of the cauldron at the top is 21".

The vessel is intact except for one small patch with rounded ends that has been riveted on the outside of the shoulder. One ring and its holder has been lost, although fragments of its cast-on staple remain. The other attachment is more or less complete, although the run-on technique has not been particularly successful as the ring-holder and bars have come away from the cauldron almost completely.

The ring is quadrangular in section, diameter 4⅜", unlike most A1 rings which are round in section; this bucket-like feature is matched on one Irish cauldron. The ring-holder is three-ribbed and the ring rides freely between this and the rim of the vessel, hence its Class A1.

The ring-holder below the ribbing passes into long horizontal bars with concave surfaces, that grip the edges of the rim on both inside and outside, and from each of these descend narrower oblong bars in contact with the everted part of the rim on the exterior and the upper part of the corrugated neck on the interior of the cauldron. This T-shaped staple is similar to that seen on the buckets. The holders have been cast-on just at the vertical lines of rivets joining the two upper sheets, probably to strengthen both joins, possibly because the vessel here is thicker and there is less danger of its collapse.

Class A2 cauldrons, with transverse bars flanking the holder, are represented in Scotland by two examples; in neither case has the body of the vessel survived, and the reeded staples alone

survive. One of the Scottish finds has no known provenance; this ring rides in a three-ribbed holder slightly flanged at the ends. The ring itself is circular in section. The staple is thick and roughly cast, and the transverse bars flanking the holder are irregularly finished-off at their inner edges.

The form of the staple is similar to that on the Darnhall cauldron, with wide portions covering the rim and extending down as narrower thick bars attached to the cauldron sides, the exterior bar being longer and enclosing a small rivet that may have been the line of join of the sheets. The inner portion of the staple encloses a bronze wire that must have strengthened the end of the bronze sheet. This feature does not occur on the Darnhall vessel, as the strengthener here was of wood.

The second Class A2 cauldron from Scotland comes in the Dalduff, Kilkerran, Ayrshire hoard. Both rings and their staples are represented, the former riding in six-ribbed holders. The transverse bars linking both sides of the staple proper have more or less parallel sides and compare favourably with the other Scottish example. The rings are large and hexagonal in section.

One of the staples is attached to a fragment of the neck and rim, showing the corrugations of Class A cauldrons and a bronze wire strengthener along the inner lip. The casting-on process here resulted in the destruction as a separate entity of the bronze sheeting between the staple sides, presumably due to the extreme heat of the molten metal. This coupled with the fact that the staples are extremely thick especially in their lower bar portion, suggests that

the join between vessel and staples was not sufficiently large enough in area to withstand the weight, and this is responsible for the appearance of these staples in a founder's hoard.

This hoard, when found in the 19th century, was quickly dispersed and only after much search was the collection in the National Museum gathered together. At the time, mention was made that some of the original hoard still lay in private hands. A further collection accumulated at the Kilkerran estate and possibly this formed part of the original hoard, although absolute proof cannot be established.

These additional objects include half of a large solid ring, presumably from a cauldron, as well as socketed axes with bronze drips spattered upon them. Another object, part of the original collection, is a sword of Scandinavian type and dated generally to Montelius IV. The mixture in this hoard can only be explained by considering the lot as scrap.

Hawkes dates the appearance of Class B1 cauldrons near the mid-seventh century in view of the Mediterranean prototypes dated just prior to this point. An Irish cauldron with staples placed on the lip-top rather than inside, and with lateral flanged extensions on the staples, recalls the Greek dinos to a greater degree than other Atlantic cauldrons.

The flange-ended extensions occur on normal B1 cauldrons, clasping the rim and bordering the ring-holder that sits upon the upper face of the everted rim. The mouldings on the ring-holder are also terminated by similar flanges. This feature appears on Class A3

cauldrons and supports the contention that these are contemporary.

The occurrence of conical-headed rivets on Class B cauldrons also shows the chronological horizon of these vessels as Montelius V or later. The fashion is commonly seen on Irish work and is another link, with Scandinavia, which probably began shortly before 700 B.C.

The West of Scotland cauldron, of Class B1, has a maximum diameter of 25" and a height of 15". Unlike the Darnhall Class A vessel, this maximum diameter occurs about halfway up the cauldron, whereas at Darnhall it occurs just below the neck, at the shoulder. The B1 cauldron is composed of a series of bronze plates riveted together and producing a tiered effect.

The base of the vessel is a concave sheet to which is attached, by a line of conical-headed rivets, a second level formed of two plates riveted together by two lines of flat rivets. Above this come four plates, unobtrusively riveted together, and attached to the sheets below by a second line of conical rivets. The next tier is similar to the first, with two sheets, and is fastened vertically and horizontally as before. The final section consists of two sheets, joined as usual to each other and to the lower level.

The vertical joins of this section and the basal section, omitting the concave base plate for the moment, lie immediately below the handles of the cauldron. The lines of plain rivets on the other two-piece section lie midway between the handles, and the four-piece section is joined more or less between these right-angle points, presumably to distribute evenly any points of strain. The body has been repaired by

patches and rivets, and by running-on.

The upper tier is decorated by a horizontal line of bosses just above its lower edge, and from this line of c 150 bosses ascend c 50 vertical lines of five bosses which fade out as the constricted neck is approached. The bronze sheet here bends sharply inwards, passes inside a bronze tubular roll of sheet metal, then is everted out and up with three rounded areas and two intervening slightly concave areas, the third of these corrugations being rolled over another tube of metal and forming the outer lip of the vessel.

The two flat areas on the rim are decorated with concentric rows of bosses, two rows in each concavity. Many of these bosses have been worn away giving the impression of perforations, but clearly the bosses were the original form. The rim has been repaired by patching, and a rough attempt was made to match the bosses. The plates and rings of the cauldron have hammered striations, probably of some decorative purpose?

The rings are 4" in diameter and are hexagonal in section. They ride in two-ribbed holders with flanged ends which are set on the rim of the vessel, the slight corrugations being flattened out to allow an even seating for the holder. From the sides of this holder extend wide bars that are curved to fit the outer and inner roundings of the rim. The ends of these bars are flanged.

From the midpoints on the outer bars thick narrower bars descend on the outer side of the rim to touch the upper part of the cauldron body. A faulty mould has here allowed some spread of metal in casting. From the wide bars on the rim-edges, rope-moulded straps

descend on the inside halfway down the body where they expand and curve and are riveted to the bronze sheet. On one side, the straps descend from the underside of the inner bar, on the other side they clasp the outer bar, plunge through the rim and emerge on the outside of the cauldron before descending through holes in the body to grip the plates as before. The internal stays seem to be the norm, and this drastic external method is probably a repair attempt to strengthen the link between body and ring.

The succeeding typological class, B2, is composed of cauldrons whose staples have elaborate flanges and which are not secured by casting-on but by rod and strap devices. Hawkes repeats Leeds' error in classifying the ring on the Poolewe, Ross, hoard as of Class B2. This ring is $3\frac{3}{8}$" in external diameter and has a T-shaped cross-section, the crosspiece being the interior edge. It appears to be a faulty or unfinished casting and cannot be related convincingly to either bucket or cauldron.

Comparisons with the prototype Mediterranean cauldrons as well as associated finds in Britain and Ireland combine to date the appearance of Class B1 cauldrons sometime c 650 B.C. and they persist until at least 600 B.C. as shown by the Llyn Fawr find. Class B2 cauldrons probably run from near 600 into the sixth century B.C. as detailed by Hawkes.

BRONZE BOWLS

The fragments of thin beaten bronze from the Adabrock, Lewis, hoard were identified by C.M. Piggott as from a globular bowl commonly seen in Rhineland and Bavaria in Late Urnfield times (1946, 124). Childe accepted this identification and cited additional parallels (1946, 131). S. Piggott suggests that the bowl was a cross-handled bowl of von Merhart's typological group B2b, of Hallstatt date (1953, 185). A further identification is advanced by Hawkes, who feels that the fragments represent a Stillfried-Hostomice cup of Late Urnfield date, basing this on the hatched triangle pattern of the rim (1957, 190).

The rim fragment of the Adabrock bowl has three shallow grooves running parallel to and immediately below the lip. From the last of these grooves hang a series of inverted triangles filled with oblique lines carefully incised on the beaten bronze. This decoration is closely allied to that of the Stillfried cups and Rhineland bowls, while the cross-handled bowls usually have somewhat more elaborate ornamentation.

Similar decoration is commonly seen on Late Bronze Age objects, as at Reach Fen (Inv. Arch. GB 17, 16), at Guilsfield (Grimes, 1951, fig. 71, 5; also see Sprockhoff 1934, text tafel A). However the identification with Stillfried cups is rendered less than probable by the fact that the Adabrock fragment shows no curvature of the metal at or near the base of the decoration, as is usually seen on Stillfried cups. One or two do not exhibit this feature, and could therefore still be included in the list of possibilities (von Merhart 1952, taf. 12, 6 and 9).

Yet the latter cup, from Saint-Martin-sur-le-Pré, is too small to warrant further consideration, even though it shows all the features ascertainable from the Adabrock fragment (Favret 1928, 27). And the former cup, from Ruda, has its rivet holes placed somewhat at variance with the Adabrock rim piece. Nevertheless, this identification remains a possibility.

The second fragment from Adabrock has two features of interest in this context, the first being that an even bend at one edge shows that the bowl had a shoulder of rather sharp outline, and this more or less excludes the Stillfield cups and Rhineland bowls from the list of possibles.

The second feature lies in the position of the surviving rivet hole. This lies well below the carination and suggests that its rivet once held the long base strap of a cruciform handle attachment. The major rivet holes on the rim fragment are exactly the correct distance apart for bowls of this cross-handled type, while the small rivet and hole nearer the rim appear to represent a repair of some sort. Unfortunately the degree of patination on the bowl and its fragmentary state hide any surface differences that might have been caused by the protection afforded by the handle attachments.

To summarize, the principal contenders in the identification of the Adabrock fragments are Stillfried cups and Type B2b cross-handled bowls, as these are practically the only objects with suitable shoulders, and the angular nature of the fragment suggests that the bowls provide closer analogies. The simple decoration is more

often seen on Stillfried cups, but is not unknown on bowls, and the positions of rivet holes outweighs this comparison.

The distribution and associations of these types are discussed by von Merhart (1952). In this regard, it will be noted that the B2b bowls have a Scandinavian spread not seen for other cross-handled bowls. The Stillfried cup is not represented in Sweden. These distributions therefore support to a limited degree the typological evidence that the Adabrock bowl is a member of the cross-handled bowl Type B2b, dated to Hallstatt C, probably in the years around 600 B.C.

Note: The reconstruction is based upon surviving B2b bowls, with handle attachments more Scandinavian than southern in form; this latter feature is of course highly tentative, but it is however suggested that the original was probably not far removed.

The cast bronze bowl from Ardoe, Aberdeenshire, has usually been connected with Cordoned Urns, because Abercromby includes it in his list of associated objects (1912, ii, 21, 124, pl. cviii 0.7, fig. 194). The original account of the find describes the opening of some cists at Ardoe and states that "There was also found a small half globular bronze vessel, much decayed, but so entire as to show the original size" (PSAS IX, 1870-72, 269-271). From this it seems clear that there is no evidence for a true association of vessel and Cordoned Urn.

The object as illustrated by Abercromby is semiglobular, lacking a flat base, and with a slightly everted rim. It exhibits a remarkably close resemblance to a cast bronze bowl from Homburg II which is described below (Auh V, V 1911, fig. p. 140).

The second cast bronze bowl from Scotland appears in the Balmashanner, Angus, hoard; both bowls are thus distinctly and significantly east coast in distribution. The Balmashanner hoard contains articles unquestionably dated to the Late Urnfield, probably in the late eighth or early seventh century B.C., and the bowl dates independently to this time.

It is nearly 4" high with a mouth diameter of 4", and appears to be a local production in view of its unfinished state. The casting involved a halved-mould, and the ooze of metal along the joint of the two halves remains as a jagged seam. In addition, there are several small bumps or knobs where the mould was imperfect, and these too show no sign of attempted removal. Along one side the metal failed to run and an area of the bowl 1½" long and 1" deep has never been completed.

The Balmashanner bowl is somewhat higher and narrower than that from Ardoe, and has a rounded rim with concave band below. Yet it is comparable to the Rhineland bowls and clearly belongs to the same group.

On the continent, two main groups of cast bronze bowls occur, one of early date on the North European Plain, the other of later date in the middle Rhine area. The first group includes the vessel from Mönchgut auf Rügen, described and dated by Sprockhoff to Montelius II (1933, abb 1). This bowl is decorated and lacks the simple rounded outline of the Scottish bowls; in addition it has a handle and is considerably larger than the bowls previously described. The Mönchgut hoard includes a sword fragment with waved and spiral decoration on the hilt similar to Scandinavian Montelius II swords (ibid abb 3; Broholm DO iii, fig. 64, 65; Auh V I vii, taf. 2, 5; Mestorf 1885, taf. xix, 175). The sword, and a palstave, are matched in the Schafstedt grave group also dated to Montelius II (Sprockhoff 1933, abb. 8).

Other cast bronze bowls of similar or slightly later date include Ostermarie auf Bornholm, Peckatel in Mecklenburg, and Wutike, Ostprignitz (ibid). The Peckatel bowl is closest to the Scottish form in its plain body and simple rim; however the flat base and handles are different, and the chronological gap between Balmashanner and Montelius III Peckatel is too great.

The second group of cast bronze bowls is found in the middle Rhine area. The large hoard from Ehingen, Schwaben u. Neuberg, includes two of these bowls as well as a cross-handled bowl of von Merhart's Class B1 of Late Urnfield date (Auh V, V 325 taf. 56, 1020-1021; cross-handles as at Unterglauheim Auh V, IV taf. 19, 2-3). The

cast bowls are comparable in size to the Scottish examples, much smaller than the Mönchgut type. The flat base is small and the rim slightly everted, the form in general being close to the Ardoe and Balmashanner bowls. Below the rims of the Ehingen bowls are bands of finely incised double zigzag decoration. As stated, the bowls are dated to the Late Urnfield, but the associated bronze basin-like vessel recalls the form of south German early Hallstatt pottery (ibid taf. 56, 1019; taf. 44, 745, 749, p. 235-236 abb 1e).

The Wonsheim hoard contains two more cast bronze bowls similar to the Ehingen bowls except that the former are somewhat higher and narrower. The decoration is similar but with only one band of zigzag lines (Auh V, II iii, taf. 5, 5-6).

However the closest analogy to the Scottish bowls appears in the Homburg hoard, which also contains bracelets with Type 2 terminals, wing-decorated axes, and pins of Late Urnfield type (Auh V, V 133-, 140, taf. 25-26). The bowl is slightly smaller than the Balmashanner specimen but its small flat base, outline, lack of decoration, and slightly everted rim, all point to the Scottish bowls as close relatives. The Homburg hoard is dated to the Late Urnfield in the middle Rhineland, and this dating for the Balmashanner bowl agrees with the other members of this Scottish hoard, such as Type 2 bracelets and Irish gold-work.

The only other cast bronze bowl otherwise known from the British Isles is that from the Welby, Leicester, hoard. The form of this furrowed and carinated bowl recalls Late Urnfield pottery, and the associated cross-handles of a Class B1 bowl, illustrates that this

bowl, in its cast nature at least, is related to the Scottish examples (Powell 1950; Inv. Arch. GB 34).

MOULDS

Ten finds of stone moulds are recorded from Scotland, and have recently been studied by Hodges (1954, list 76, 78, but note that the moulds from Cromar and Culter, Aberdeenshire, are one and the same). The tools represented include palstaves and socketed axes, Class IV and V spearheads, and these are divided arbitrarily into Middle and Late Bronze Age types.

The map of the typologically earlier tools shows these moulds to be limited to Ireland and North Britain, suggesting to Hodges that "lowland England played no part in the actual production of the implements", and therefore considerable trade to the south must have existed (ibid 66, map 69). However, the recognition of a distinctive group of bronzes in the Somerset region, with outliers farther east (the TBB group or Ornament horizon), invalidates Hodges' conclusion, and the great concentration of basal-looped spearheads in the lowland zone suggests that traffic in some bronzes existed in the opposite direction, from south to north, as well as to the continent (Evans 1933, map 1). In addition, a whole series of bronze moulds exists in this southern area, and these may be dated to this early period.

Several of the Scottish stone moulds are of steatite, but only one was found in reasonable proximity to natural outcrops of the stone. Hodges thinks the position is clearer in Ireland, where the distributions seem to show that the moulds and outcrops often coincide, particularly for the earlier types of objects.

The Kintyre steatite mould may be Irish in origin, but the map of Scottish Middle Bronze Age moulds suggests little connection. Possibly in this period, part at least contemporary with the TBB and Glentrool horizons, local production of the normal and widespread types was carried out with less contact between Scotland and Ireland than in later times when the gold industry in particular had developed to its peak, in Scottish LBA3.

The distribution of moulds in Scotland is too sparse to allow any comparisons to be made with the known spread of copper deposits, and this remains one of the primary problems, the sources of copper and tin. In this connection, a start has been made with some metallurgical analyses of bronzes in Britain, but no work has yet been done on the Scottish material. The preliminary results in the south show that bronzes of Middle and Late Bronze Age types fall into two groups, Group I bronzes composed of copper and tin with only accidental traces of lead, Group II bronzes containing a more or less fixed percentage of lead, possibly added to the copper and tin for easier casting. Group I bronzes are typologically Middle Bronze Age, Group II is Late Bronze Age, and the Somerset hoards (Ornament horizon, Taunton-Barton Bendish) fall into Group I and therefore should be considered as Middle Bronze Age.

In this study, however, the representatives of this phase in Scotland are termed LBA1; this is in accordance with recent work on Welsh and Irish material, and the evidence of the continued life of some of these early types into the full Late Bronze Age. It is only a question of nomenclature, as the absolute

chronological position of Glentrool is not in doubt. Also of some interest are the analyses of the Langwood Fen shield and spearhead, which appear to be of Group I bronze, thereby supporting the early dating proposed on typological grounds.

In the Late Bronze Age the stone mould continued in use, but clay moulds began to be employed extensively. Presumably this technique had been used in earlier times, but the low survival value of clay moulds, and the difficulty of recognition, contributes to the lack of evidence of widespread use.

The preparation of these moulds has been discussed in detail by Maryon (1938b, 212-; also see Sheppard 1930, 347; Hodges 1959, 233-). Hodges points out that clay moulds do not differ in their form from bronze and stone two-piece moulds, and are therefore capable of being reused. However, the outer casing of coarse clay seen on most clay moulds, as from Jarlshof, is one-piece, i.e., it has been applied around the two halves of the actual contact mould, and would require breakage to extract the casting. The cire perdue method, if ever used, would produce a one-piece mould which would naturally require breaking to release the finished object, as the shrinkage of bronze probably would not be sufficient to allow easy withdrawal of more or less tapered objects.

The mould building was presumably based upon a pattern of specific type, and some wooden models are known from Tobermore, Co Derry (Hodges 1954, 64-, fig.3). In addition, wood graining has been recognized on a clay mould from Jarlshof (PSAS lxvii 1932-33 115; the wood-grained swords at Belfast Museum are now suspect, Hodges

1956, pl. IV). These models are distinct from the wooden swords found at Grotsetter, Orkney, and Inver, Co.Donegal (Wood-Martin 1886, fig. 4) which appear to have been weapons themselves. Hodges discusses the influence of wooden models upon the shape of the bronze castings, and suggests that this is the reason for the basically rounded cross-section of Irish axes, and the slacker outlines of other Irish types.

Hodges has attempted to demonstrate that clay moulds, more or less limited to the Highland Zone, are contemporary with the two-piece bronze moulds found in southern England. It is not certain that all the bronze moulds of the south are truly of Late Bronze date as Hodges maintains. In Northern Europe, somewhat similar palstave moulds are not dated later than Montelius II, and it seems clear that some of the British moulds are of this age, contemporary with the Somerset hoards ,which in this technological discussion are clearly Middle Bronze Age (Broholm DOiv 432; Hindenberg 1925 104-, taf.x; Evans 1881 439 441).

The most important evidence for this is the fact that the stone moulds for palstaves found in the north of Britain and Ireland are not of the same style as the majority of palstaves in the south of England; in addition, the stone spearhead moulds are for Class III spearheads, which are seen only in abundance in Ireland and Scotland, and rarely in the south.

The Scottish, and many Irish,palstaves are local developments from Early Bronze Age axes as detailed from page 90, and the winged palstave, with the distinctive high triangular

flanges, is a northern type hardly represented in the south of England. The general type of palstave seen in early contexts in the south is that seen in the Blackrock hoard, with wide blade, not crescentic, and decorated with ribs or trident, and either looped or unlooped. Some of these have low flanges, others high. Their position plainly lies in the TBB horizon.

The palstaves in later hoards in the south have narrower blades and are straight-sided, the flanges too having a straight outline; they are decorated with three ribs in many cases, or may be plain (Clark 1940). The type occurs in carp's tongue hoards (e.g. Inv.Arch. GB37), more rarely in earlier contexts at Wilburton, Guilsfield and Great Freeman Street (GB22).

The specialized palstave type, as in the Blackrock find, is hardly seen in the north of Britain or Ireland, and shows an industry existing in southern Britain at an early stage in the later Bronze Age, slightly earlier than the TBB phase. The production of other objects during this phase, such as rapiers, probably Class IIIA and IV spearheads, is thus only to be expected.

In the full Late Bronze Age, the existence of large-size hoards in south-eastern England points to a method of organization different from that of the north, where large founders' hoards are very rare (Duddingston Loch the only Scottish representative). In the south, a more wholesale approach seems to have been made, with emphasis on speed as produced by the use of bronze moulds (for socketed axes).

In this connection, the minor differences apparent on each member of a large group of objects such as socketed axes in these large hoards of the south or east, suggests the use of these bronze moulds to produce models, possibly of lead, rather than direct casting. Coghlan has however demonstrated that bronze moulds can be used as direct moulds, although Hodges doubts that they were so employed (Coghlan 1951, 113; Hodges 1954; also see Clark 1952, 196).

The chief difficulty in casting, whether in clay, stone or bronze moulds, must have been that of under-heating, and many lengthy castings, especially swords, show a distinct lumpiness at the butt, the last part to receive the metal. Many of these swords eventually broke at the butt, and show attempts at repairing by either burning together or running on . Repairs of the blade were not attempted (see Coles and Livens, forthcoming PSAS,for double repair of native sword).

The methods employed for these repairs have been described by Maryon (1938b, 185; Hodges 1959, 235). These repaired swords and several trumpets, as well as a few spearheads, are limited to the Highland Zone, particularly Ireland, but the technique was in use for the attachment of staples to buckets and some sunflower heads to pins. The rarity of run-on repair in the lowland area of Britain probably was connected to the different organization there of the bronze trade. The highly-organized founders of the south probably did not bother with individual repairs, and breakages would at once become scrap.

S W A N'S - N E C K S U N F L O W E R P I N S

British swan's-neck pins have been fully discussed by G.C. Dunning (1935), who considers that the iron pin from All Cannings Cross is typologically the earliest example (fig. 2, 1). This has a long beaded head and is fairly common in Germany where it is dated to Hallstatt C in the south (fig. 1, 1; Ebert 1928 xi, 371). A conical-headed swan's-neck pin is apparently derived from this type and occurs in Switzerland (Anzeiger für Schw. Altertumskunde n.s. xv1, 100, fig. 4, 3), Wurttemberg (Wagner, Fundstätten ... i, 4, fig. 2, k) and eastern France (Chantre, Age du Fer pl. xxxiv, fig. 3, 2; Déchelette 1913 ii, 2, 844, fig. 345, 3-4), dated here to Hallstatt II (D).

The All Cannings Cross type, of Iron Age A, led in Britain to bronze renderings of devolved simplified forms with a plain head but retaining the characteristic S-curve of the neck as at Woodeaton (Dunning op. cit. fig. 2, 2), and even simpler forms may be somewhat later (Jordan Hill and Portslade fig. 2, 3 and fig. 6). These have reduced the exaggerated bends of the original types to a simple wide curve, and it is this type of curve that is reproduced on the Scottish swan's-neck pins with sunflower heads. Other varieties of swan's-neck occur both in Britain and on the continent, but these have no direct connection with Scotland (op. cit. 270-272).

The swan's-neck pin reached Northern Europe probably in the late sixth century, in the first Iron Age culture of North-west Germany, the Wessenstedt of East Hanover (Schwantes 1911; Jacob-Friesen 1934 taf. 39, abb 4), appearing in Schleswig-Holstein as early evidence of Hallstatt C pressure, dated in local terms to the second phase of

Montelius VI or the Initial Iron Age (Hoffmann 1936).

At this point, various divergent types began to appear, and in fifth century Jastorf A the swan's-neck pin lost its horizontal head (Jacob-Friesen op. cit. taf. 40, abb. 3); the development is also seen in Britain and the types lose all identity with the Scottish pins (Dunning op. cit. fig. 2,4; Wilts. ANHM xliii 1925-27, 82, pl. xi, C 3). Varying head forms are common in North Germany (Auh V, V, taf. 69, 1294, 1280, 1288; P.X.i 1909 140ff, abb. 1-2; Schwantes 1911; Aberg 1936, taf. xviii).

The emergence of the swan's-neck pin in a form recalling the Scottish pins can thus be dated reliably to the late sixth century or, more probably, to the fifth century B.C.

Turning now to the sunflower heads of Scottish pins, these have recently been discussed by Hodges (1956, 43, map fig. 5) but his map is not as accurate as that of Raftery (1942a, 72) as it does not appear to have been limited to sunflower pins. In addition, the Scottish pins should be omitted from his list as all of these are of the swan's-neck type which is unrepresented in Ireland.

Hodges divides the Irish sun pins into two classes, Class I with small hemispherical central boss and engraved concentric circle decoration, Class II with large conical boss and decoration as before, or more commonly, radial ornament, or without decoration. The well-known parallels to Class I pins occur in Scandinavia and are dated mainly to Montelius V (Montelius 1922, fig. 1326-1332; Broholm DO iv, fig. 163, DB iii no. 1084). The origin of the sunflower pin lies, it has been suggested, in the attachment of the Scandinavian double-button

with concentric ornament of Montelius IV to a bronze stem so that the head either turns forward or lies horizontal (Broholm DO iv, 75). A sunflower pin from Heltborg is dated to Montelius IV by Broholm, but a date early in V seems equally as feasible (DB iii, 49, no. 454).

In Northern Germany, the sunflower pin is also dated to Montelius V (Sprockhoff 1956, i, abb 61, 15, ii taf. 19). The origin of the sunflower pin appears to lie logically in the concentric ornamentation style of Scandinavia which appeared in the Early Bronze Age (Montelius 1922, fig. 822, 873, 905, 1033-4), although the pin itself does not emerge until late Montelius IV or V. However, other types of decoration occur on sunflower pins of both the straight- or angular-stemmed Irish specimens, and on one Scottish pin.

The radial ornament of some Class II pins appears to have a forerunner in the "East German looped-pin type" dated to Tumulus Bronze or Montelius II at Namslau (Seger 1909, 55-64). These pins have a loop on their curved shafts, set well below the head, and occur in other areas of Central Europe. In Bohemia, pins of a somewhat different type, with more or less right-angled bend and with loop immediately below the head, show similar although more evolved decoration (Bohm 1936). These pins, as at Busovice, are dated to the period of overlap between Reinecke C2 and D, or in Scandinavian terms to early Montelius III.

A pin from Tschetzschnow near Frankfurt on the Oder shows even closer similarities to the Irish Class II sunflower pins, in its right-angled stem, no loop, and rosette and peripheral zigzag decoration (Krumbein 1937, 413, abb. 1; Götze 1920, 69). This find is dated by most authorities to Montelius III, but the radial decoration occurs on

other pins with different stems throughout the Early Bronze Age in Central Europe and elsewhere (Billig 1958, abb 62, Aunjetitz; Auh V I iv, taf. 4, 9-19; P.Z. xxx-xxxi, 1939-40, 412; Germania xix, 1935, 206).

The decoration of some Irish pins thus approximates this early style which is unknown in Scandinavian contexts. The route by which such decoration reached Ireland is not marked by distribution, and the absence of intermediate finds suggests that possibly independent development may best explain this.

The only British pin combining an iron swan's-neck stem and a bronze sunflower head is that from the settlement at Fengate, Peterborough, found with Iron Age A pottery similar to that from the Hallstatt C-dated site at Staple Howe, Yorkshire. How did this combination of swan's-neck and sunflower head come to be established?

The swan's-neck appeared on the North European Plain in Wessenstedt times, around 500 B.C. The Scandinavian sunflower pins were at this time in their last stage of existence, dated sometime near the transition from Ultimate Bronze Age to Initial Iron Age (Broholm DO iv, fig. 245). The combination of the two ideas, resulting in a sunflower pin with swan's-neck, appears in east and north-central Germany in the fifth century, but generally these are all of bronze (Petersen, 1929, 102ff).

Examples like the Fengate pin, with bronze head and iron stem, come from Brandenburg; one from Krielow has a slightly concave head (Voss and Stimming pl. i, B), and another from Zilmsdorf has a flat iron head to which a bronze plate, with concentric and short radial

lines, has been attached (Aberg 1931, 101, abb. 216). Other rather exaggerated variations also occur in this early Iron Age (e.g. Ebert iv, taf. 192, a).

A pin such as that from Zilmsdorf may well have provided a model for Irish bronze workers seeking a further decorative pattern for their concentric-lined sunflower pins; while the overall design is different, the idea of short radial lines is duplicated on Irish pins in somewhat more elaborate forms (e.g. Evans 1881, fig. 463). This possible prototype appears to be chronologically more suitable for Irish Class II pins than the Montelius III pins are, and is typologically as close.

A further pin, similar to the Fengate example, illustrates the range of life of this combined type. A grave near Sprottau in Lower Silesia contained an iron knife and a swan's-neck sunflower pin dated to early La Tène, near 400 B.C. (Petersen 1929, 106, taf. xxx 6a-b). In north-west Germany, such pins, mostly all bronze, occurred in Wessenstedt times as noted above, and in the succeeding Jastorf A phase, the swan's-neck pin was reduced to a mere crook stem with vertical head. At Sülldorf in Holstein such a devolved iron stem was attached to a sunflower head (Knorr 1910, 27, taf. v, 87).

The life of the true swan's-neck sunflower pin thus is relatively restricted, from the late sixth century well into the fifth century.

Hawkes in discussing the Fengate pin (1945) stated that the only comparable British pin was that from Tarves, Aberdeenshire, and suggested that this was probably a local rendering in bronze and

could therefore not be dated as precisely as the Fengate example. Since 1945, two further examples of swan's-neck sunflower pins have been recorded from Scotland. C.M. Piggott described a ? presumed grave group from Orrock, Fife, containing one of these pins (1948), and a note in PSAS lxxxiii, 1948-49, 243, described another pin, this of unique decoration, from Loch Broom, Ross. And recently, a sunflower pin has been found at Tents Muir, Fife, although at the time of writing it is not known if the stem is of the swan's-neck variety or straight Irish type. (swan's-neck type; information from R.Candow, Esq.)

However, the total of swan's-neck sunflower pins from Scotland now stands at a possible ten. Two pins of this distinctive type were displayed in Edinburgh in 1952 where they were erroneously attributed to a hoard containing swords and a flesh-fork. The pins are now at Inveraray Castle and examination of the records shows that all these objects were found separately, and it is not now known if the two pins were found together. It appears that the pins were discovered near Campbeltown, Kintyre.

Reference to the early accounts of the Tarves find suggests that the hoard originally contained two bronze pins, but this addition to the list is somewhat doubtful (Kemble 1863, 162).

In the report on the Orrock find, it was suggested that a pin in Perth Museum, of unknown provenance, probably represented the pin from this possible grave group. The fact that no objects in the museum recall any of the other finds from Orrock, such as bracelet fragments, perforated rings, casts some doubt upon this suggestion, and examination of the Perth pin and the Orrock drawing shows that in all

probability the pins are different. The Orrock pinhead is smaller in relation to the stem, and the position of the head in regard to the swan's-neck differs.

Another early record of a sunflower pin occurs in Gordon's Itinerarium Septentrionale (1726, pl. 1, 13). The pin, formerly in the Clerk of Penicuik collection, passed into the Young of Burghead collection and thence to the National Museum of Antiquities, by which time it had lost its sunflower head. The pin illustrated by Gordon had concentric decoration on the head and a stem bent in several places near this sunflower head. While the curves are not absolutely typical of the swan's-neck form, it appears from the illustration and from the actual object that the pin has been damaged by slight straightening, but not sufficiently to disguise the swan's-neck variety.

In PSAS liv, 1919-20, 149, a description of an object purchased from Young of Burghead reads as follows: "Bronze Age disc-headed pin, said to have been found at Cramond", and quotes Gordon's illustration. The pin appears to have lost its head at this time, for the description in the Museum's accession cards notes that the pin has its "head awanting". Callander stated that the flat discoid head was attached by the edge to the bent top of the stem, but based this description upon Gordon's illustration rather than on the actual object which had by this time reached the Museum (PSAS lv, 1920-21, 35).

The last swan's-neck pin from Scotland occurs in the Grosvenor Crescent hoard. The pin has always been described as an Irish type of sunflower pin with stem broken just below the right-angled bend. Credit for this lies with Evans (1881, fig. 464) who made the perfectly understandable error of showing the continuation of the broken stem as

completing the right-angle. The Tarves pin was the only swan's-neck pin known at this time in Britain, and the Irish nature of the Grosvenor pin was assumed and defined by Evans' drawing.

However, examination of the broken stem shows a slight inclination towards the base of the head, and this is substantiated by the presence of a patch of wear, a polished surface, at this basal point, and indeed the metal has been slightly worn away here. The wear is identical to that on the Loch Broom pin, and none of the Irish sunpins show such traces. The Grosvenor pin is valuable in another way because its decoration appears to be of Montelius VI inspiration (Hansson 1927, fig. 157, 178, 186).

The only other evidence of sunflower pins in Scotland is the mould for a conical-bossed head at Jarlshof, Shetland. It is of course impossible to state whether or not this was to have a swan's-neck stem, but the chances are that it would not. A mould for a straight stem may have provided an Irish-type stalk for the pin, and in addition the position of the site, on the Irish-Scandinavian route, and the belief that the smith was an "Irishman", all point to the suggestion that the sunflower pins manufactured here in the later first millenium B.C. were of the straight-stem Irish variety.

The distribution of Scottish swan's-neck sunflower pins is distinctly eastern, as befits their origin. That they are of local manufacture is on the whole unlikely, as similar pins are relatively common across the North Sea as detailed. But the preference of the people of Scotland for this type of pin as opposed to the Irish variety that clearly must have been available is puzzling in view of the mass

of evidence of Irish-Scottish trade from the seventh century.

The Loch Broom pin appears to be a local variety, with continental swan's-neck stem and Irish-type ornament, although the Zilmsdorf pin shows that the radial decorative style could have been of continental origin. The peripheral decoration on the Loch Broom pin is more Scandinavian-like than Irish, with concentric designs rather than radial lines (e.g. Montelius 1922, fig. 1149). However the large conical boss is clearly of Irish Class II inspiration, and is generally acceptable as a purely Irish feature. This Class II pin thus serves to set the date of Irish Class II well before the date of 250 B.C. proposed by Hodges (1956, 46).

The technique of decoration on the sunflower heads is incision with some sort of compass arrangement. The edge of the disc is sometimes pressed slightly forwards, this possibly with the aim of protecting the decoration from undue wear. The pins from Loch Broom, Perth and Kintyre are the only decorated pins with this raised edge, which also occurs on the plain Tarves pin. Scandinavian sunflower pins in general seem to lack this feature, and some at least appear to have cast decoration (Montelius 1922, 1329, etc.), which is not seen on Scottish pins.

The Grosvenor Crescent decoration is partially compass-drawn, its four outer circles inscribed in this way, while the inner two circles are too close to the centre to allow accuracy with a compass-like method and obviously were drawn by eye in a rather slipshod manner.

The uniformity of circle decoration on several pins also varies; the Perth pin has ten incised lines of varying depths and

widths, and the lines on the two Kintyre pins are different in this respect.

The stems of these pins appear to have been inserted through a small hole in the head, and then clinched by heating and hammering. The pin from Kintyre 1, with small conical boss, was treated in this manner, but more care would be needed to preserve the projecting boss of Kintyre 2. The Loch Broom pin differs from the others in its Class II feature of a large conical central boss, which seems to have been attached by running-on. The concentric line decoration surrounding the centre-piece is generally uniformly thick and deep, but some variation is seen in the nine groups of circles surrounding this central work. The groups are each composed of a dot and three concentric circles except for one group which for some reason has a dot and five circles. Possibly this group was the first to be drawn and the effect was adjudged too jammed and displeasing to the worker who thereafter reduced his plan to a dot and three circles.

The Tarves pin was found with two or three swords, a chape and another pin. The chape is of the normal tongue-shaped type normally attributed to the Wilburton complex in southern England, but continued in use throughout the Late Bronze Age. One of the swords is of the normal Ewart type but with the unusual feature of a slot in the tang, not ordinarily seen on Ewart swords.

The second sword has a cast bronze grip and pommel, the grip with edge ridging and rivet holes, the pommel cast separately. Several other swords with bronze grip and pommel have been found in Scotland, including one in the Grosvenor Crescent hoard associated with

other swords and a decorated version of swan's-neck sunflower pin.

The Orrock, Fife, find contained another pin of this type, with perforated rings and fragmentary penannular armlets of Type 1. The rings have rectangular perforations at the sides rather than the outer edges and are matched by a larger ring in the Poolewe hoard. The armlets are among the most southerly examples of bronze Type 1 and represent local renderings of the more common gold armlets in the south-west of Scotland.

Cup-headed Pins

The cup-headed pin from the Point of Sleat, Skye, was found with a Late Ewart sword, Class V and VB spearheads, and a curved socketed knife. Pins of this type appear to be based upon Scandinavian models, although these latter are generally longer. They occur in Montelius V contexts in the North (e.g. Montelius 1922, fig. 1315-1317) and are dated to the end of the Bronze Age on the north-west European Plain (e.g. Hoffmann 1936, 93, abb 1, 94 abb 2; Hoffmann 1938 taf. xvi, 130A 63; P.Z. ix, 1917, abb 4, abb 12; Mestorf 1885, taf. xxxv111, 420, 422). At a later date the cup-head pin became fused with the swan's-neck stem in the same manner as sunflower pins (Broholm, DO iv, 261; see also Aberg 1936, taf. xviii, Hallstatt Grab 68).

Hodges has mapped the distribution of cup-head pins in Britain and Ireland. An example from Heathery Burn is dated to the mid-seventh century by its associated bucket, and a similar date applies to the Irish finds which include associated sunflower pins at Derryhale and amber at Marybrough.

The Irish cup-head pins are identical to the Sleat example, and it is suggested that this Scottish pin is in all probability an import from Ireland (Drumcullen, BM 54.7 - 14.168 cf Sleat, NMA Ll954.3). The associated objects at Sleat include a curved knife which is limited in distribution to Ireland and North Britain although an example occurs in the Fresné-la Mère hoard with other Highland Zone types (Hodges, 1956, 36, 38; Savory, 1958, 28).

One of the Sleat spearheads is a product of the same mould as one from Cullerne, Morayshire, and the curved knives from these hoards may also be a pair. A further curved knife in the Wester Ord hoard

is dated to c. 700 B.C. by the associated objects, including a necklet and Type 2 bracelets.

All the evidence points to a date in the seventh century for the Sleat cup-head pin, possibly slightly later, and to the Irish-nature of the entire hoard as shown by the Irish curved knife, spearhead matched in the Knockadoo hoard, and cup-head pin itself.

Side-looped Pins

The Glentrool pin, with slightly domed disc head and side loop, is Central European in that it shows the replacement of the perforated-neck pin by a looped pin (e.g. Holste 1953, taf 10, 13; Seger 1909, 55ff). The idea spread westwards and reached North Germany by Montelius II and Scandinavia by Montelius III, where various divergent forms seem to have been evolved.

The Glentrool pin and two Irish pins are clearly derived from one of these North European types (BM 91.4 - 20.5, Ashmolean 1927/2853). The plain disc head, undecorated straight stem and low-set side loop are seen on pins from Marzahne Kr Westhavelland, Arneburg Kr Stendal, and Zethlingen Kr Salzwedel, where they are dated by associated grave goods to Montelius II or III (Janssen 1935 abb 5, abb 7; Bohm 1936, taf. 10, 19).

Some pins in North France have side-loops of this form and are probably derived from the same source, but their contact with swollen and ribbed-neck pins in the West resulted in hybridization as seen in pins from Amiens and Picardy (Breuil 1907, 514, fig. 1, 10, 7, 9; Hawkes 1942, 30, fig. 3, 5).

The Danish and North German side-loop pins with conical, biconical and other head forms presumably are a slightly later variant of side-loop pin in this area, unconnected directly with the Glentrool type (Janssen 1935, 208-). Also separate are the side-looped disc-head pins from Blackrock and other sites which combine features from various areas (C.M. Piggott, 1949, 108- ; Arch J xxxv111, 1881, 324; Devizes Mus. Cat. II, B 16), the stem decoration and side-loop from Picardy, side-loop also from Glentrool, head decoration from Central

Europe (e.g. Müller-Karpe 1948, Hanau dated to Reinecke D - Hallstatt A). Their date falls within the TBB phase by typology and associations, as does the Glentrool pin.

PENANNULAR BRACELETS

The simple penannular bracelet, with plain terminals, is an early form of decorative object, and can be seen in early Bronze Age contexts in south-west Germany (e.g. Holste 1953, 56, abb 4, 11-12 of Holste B and C; taf. 17, 13-14 with tapered terminals of Holste B; taf. 16, 12 with plain terminals of C). But the origin of the penannular bracelet with specialized terminals, Proudfoot's Type 2 and 2a here called the Covesea type, with terminals expanded outwards only, can be only clearly seen in later contexts, still however pre-Urnfield in date.

From Upper Bavaria, Grabhügel 8, Group X111 from Riegsee, comes a heavily-ribbed bracelet (Naue 1894, tafel V111, no. 5) with poppy-head pin and wheel-pendant, the bracelet showing thicker external ribs at the terminals. From Oberrhein (Holste 1953, p. 89, abb 10, no. 2) a similar bracelet, of the Mels-Rixheim group, is dated to Reinecke D. A bracelet from Ladenburg (Germania XX111, 1939, 11, abb 4) of lozenge section, unlike the D-sectioned Oberrhein armlet, and with Type 2 terminals, was found in Reinecke D contexts with another bracelet, this of Type 1 with terminals expanded all round. Similar Type 1 bracelets occurred with a wheel-pendant and a "conjoined special" ornament, (part of a necklet? of P.Z. IV, 1912, 119, Kyffhäuser Schwarzburg hoard with plain penannular bracelet showing ribbing at outer edges of terminals), in Hügelgräber contexts at Darmstadt (Germania, XXIV, 1940, p. 96). The ribbing idea, seen only at the terminals, is prevalent in other areas as well (Molzbach Kr Hünfeld, Germania XIX, 1935, 4 - abb. 6, no. 4, here in a penannular armlet with ends pressed together).

Plain bracelets, of penannular form, and slimmer than

most of the foregoing, are of earlier date in some cases and can be connected by this thinness of rod, not by terminal type, to the Scottish Covesea type (e.g. Houstka Bohemia, Reinecke C date - Cowen, 1955, tafel 16, no. 12-15); these are of more or less D-section which is matched by the Covesea form. Very large bracelets of the Covesea type, with terminals expanded outwards, occur in Tumulus Bronze contexts in North Germany, e.g. at Trebbichau Kr Dessau-Köthen, both Type 2 (P.Z. XXXIV-XXXV, 1949-50, 235 ff, tafel 14, no. 2, 3) and Type 2a (with ribbing tafel 14, no. 1). Also associated here were objects of ring-money form, seen in Montelius II and III in Scandinavia, special armlets, and ribbed-terminal penannular bracelets with ends together; these last two named occurred in the Naumburg hoard, same area, (tafel 15-16) with flanged axes. The normal Reinecke D bracelet, with heavy ribbing on the outside, is seen in the Riegsee group as stated, often without terminal expansion, and in the Hötting group of early Urnfield date in west Austria (for discussion of these see Smith, 1957, fig. 7, no. 2-3, Riegsee; fig. 8, no. 2, Hötting, this with Type 2 terminals). The Baierdorf Urnfields in east Austria have also yielded these ribbed bracelets with both Reinecke D and Hallstatt A associations, but slightly earlier dates prevail in South Bohemian associations (Bohm 1937, heavy-rib bracelet, late Reinecke D; lighter-rib bracelet, early Reinecke D). Turning again to the Riegsee group (Reinecke D), the ribbed bracelet is sometimes found with other penannular bracelets, these with terminals not expended but pointing out, and with incised transverse lines at the terminals producing a ribbed effect; one is illustrated by Smith (1957, fig. 7, 4). The decoration on the bracelet is not seen on Covesea armlets, but nevertheless the basic idea for these bracelets is

present in Reinecke D. A grave group from Riegsee, Oberbayern xiii, 8, has a Covesea-type armlet ribbed at the terminals, with decoration at the back, and is close in outline to the Scottish examples (Auh V, V 1911, tafel 38, 637).

Another example of this is seen in the Dietldorf find of Holste's South Bavarian and Oberpfalz group; the bracelet in question has terminals expanded outwards, and has cast ribbing at these terminals, with less pronounced ribs elsewhere. These are close to the Covesea bracelets (Holste, 1953, tafel 12, 21 and 23) and are dated by the conjoined spiral ornament and pin to Reinecke D. Marstetten Kr Wangen, has also yielded a bracelet with cast ribbed bands, close in form to the Covesea type (ibid. tafel 22, 4), of the Mels-Rixheim group of Reinecke D.

Slightly later specimens of bracelets, dated generally to Hallstatt A, also show resemblances to the Scottish Covesea bracelets, some closer than others. A grave group from Steinheim, Kr. Offenbach, contained a bracelet with terminals expanded outwards (Germania xxxiv, 1956, 44) and a similarily dated grave, Hallstatt A, at Gammertingen Kr Sigmaringen also contained a decorated version of this bracelet which however is not particularly reminiscent of the Covesea type (ibid 61, abb 1, 2).

From Wollmesheim, Rheinpfalz, a penannular bracelet with thickened ends slightly turned outwards, is dated by its associated Erbenheim sword to early Hallstatt A (Cowen, 1955, tafel 19). Wagner illustrates Type 2 bracelets from his Nordtiroler Urnenfelder (1943); distinctions however between variations in terminals are not drawn for

his Fein gerippter Armreif group (31, no.16), while the heavily-ribbed armlets (of Reinecke D as at Riegsee) have terminals turned outwards (31, no.15). Both forms occur together at Matrei, 1844, dated to Wagner's Zeitgruppe II (tafel 7, 20, 21) and this corresponds more or less to Hallstatt A, although his Fein gerippter Armreif group may extend into Hallstatt B.

The heavy-ribbed bracelets with everted terminals survived into later times as well, into Hallstatt C at Hallstatt (Sacken, 1868, tafel xvi, 9) and in Bavaria (Kossack 1957, 207ff, abb 7).

Ribbed bracelets in France are of considerably earlier date than these. One from the Vinets, Upper Seine, inhumation grave has everted terminals and the ribbing in this case does not approach the ends (Sandars, 1957, fig 24, 4, p. 95-96). Others from Bennwihr Alsace, have expanded terminals and the ribbing is restricted to a panel of oval shape (ibid 119-120, grave ii). These bracelets are of D-section and Holste has figured one similar to the Vinets example from Allendorf Kr. Homberg (1939, pl 49, p. 67), found in a tumulus dated to Reinecke D, probably early in this phase. Sandars has listed this type, the Vinets-Salem bracelet, which appears to be another form of the Stark gerippter Armreif group of the Tumulus-Urnfield transition.

Another type of armlet comes from Pfaffenhoffen, near Saverne, France; this has incised decoration, but the treatment of the terminals is like that of the Covesea bracelets (Sandars, op.cit.82, pl. iv,4). Cruder examples of this expanded terminal style occur on flat-sectioned bracelets from St. Gervais, Yonne, found with pottery of First Urnfield form (ibid 139, fig 31, 7). The associations at Pfaffenhoffen include a Friedrichsruhe cup close in form

to the Hallstatt A Fuchsstadt type, dated here to Reinecke D.

A date in Late Urnfields applies to some bracelets with slight outward expansion of the terminals found in the Haguenau area, Schirrheinerweg Canton (Schaeffer, 1926, 180, 211, fig. 72, no. 36e and 44h). And from Chaumes d'Auvenay, Beaune, bracelets with expanded terminals and ribbing are recorded by Henry and dated to Dechelette B.A. IV/Hallstatt I (1933, 30, fig. 4).

Breuil (1907, 519 ff) has described and illustrated penannular bracelets from North France, some of which are similar to Scottish examples. From Le Plainseau several Type 2 bracelets are listed, one of which (p. 519, fig. 4, no. 12) has terminals as in the bracelets from Covesea and Gight, with, however, incised transverse lines on the outside surface. Another (fig. 8, no. 33) has flatter Covesea terminals, with cast ribbing in groups near the end (fragment only), and this of course is suggestive of Type 2a Scottish armlets. The Dreuil hoard contained a bracelet similar to the Le Plainseau specimen last mentioned (fig. 6, no. 20) with flat terminals and cast ribs which are set close together near the ends. Saint-Roch Amiens (fig. 6, no. 17) may also belong to this type. Other Type 2 bracelets, all in bronze, come from Marlers, Somme, one of which (fig. 4, no. 10) has terminals expanded more externally than internally — this is a feature seen on some Scottish bracelets (e.g. Wester Ord, Ross and Cromarty) and is not repeated on the other specimens illustrated from Marlers (fig. 6, nos. 21 and 22) which are of this flattened-terminal variety. Dechelette (1910, i, fig. 119, no. 3, 5) illustrates two bracelets from Vernaison, Rhône, both of which appear to have terminals expanded outwards but their general form and decoration are not close

to the Scottish examples.

The Vénat hoard, with carp's tongue associations, contains bracelets ribbed either in groups, or only at the terminals which are of everted form (Inv. Arch. F6, 86-88). And the recently published hoard from Challans, Vendée, more or less contemporary with the Vénat hoard, contains penannular bracelets with everted terminals and cast ribbing in varying degrees at these terminals (Gallia, XV, iii, 1957, 78, espec. Pl. 7, 37).

The Swiss lake-dwellings have yielded many penannular bracelets of Type 2 and 2a, and it is these that Benton (1931) and Proudfoot (1955, 35) have accepted as the ancestors of the British types. Keller illustrates many of these, principally from Auvernier and Möringen (1878). Several have terminals tapered and everted, and are not really members of the expanded-end family (pl. lxvi, 5, lxvii, 3-4) while others are closer in form to the early Central European bracelets with wide flat terminals (pl. xciii, 10 from Cortaillod; lxiii, no. 4, 5; lxv, no. 1; lxvi, no. 2 from Möringen). However some of these have cast ribs near the terminals, and are thereby connected typologically with other bracelets showing this feature (pl. lxiii, no. 4, 5; lxiv, no. 4 from Möringen; lxvii, no. 5 from Auvernier), and possessing externally-expanded terminals closer to the Scottish specimens. Other bracelets have terminals very close in form to that of the Covesea type, but are decorated with incised transverse and diagonal lines (pl. lxv, no. 2, 3, 4; lxvii, no. 2, from Auvernier; pl. clviii, no. 6 from Lac de Bourget). The Bevaix bracelet quoted by Proudfoot is not close in form to the Covesea type (pl. lxvii, no. 1). One of these Late

Urnfield bracelets from Switzerland occurs in the Shoebury, Essex, hoard (Inv. Arch. GB 38, no. 1) and another flat-ended bracelet is seen in the Minnis Bay hoard (Worsfold, 1943, pl. X11, no. 41) as noted below.

But other areas, including Scandinavia and, particularly, the north German plain, also have yielded bracelets which may equally as well be considered as the forerunners of the Scottish Covesea type, both Type 2 and 2a,

Proudfoot lists several bracelets from Denmark in an attempt to show that the type occurs in the North, but his examples are late in date and are not like the Covesea type in terminal shape. Indeed, it is necessary to draw a line somewhere to separate the true Covesea-like bracelets from those of varying sections, decoration and size, with only the outward-expanded terminal as the link between the whole assemblage. From Sweden, a gold bracelet (Gantofta; Montelius 1922, fig. 1044) has expanded terminals rather like those seen of Scottish Type 1 and 2 bracelets, and with two grooves just below the expansion. The illustration makes it difficult to determine the true nature of this specimen, but we see that in Montelius III such a form existed. Of the same date, a flat band bracelet, with expanded terminals turning outwards, is as close to the Covesea type as that from Bevaix, Lake Neuchâtel, but cannot be counted as representative of the class (Gudhjem, Denmark). The true Covesea type does not appear to have occurred in the North in such an early period. Later examples from the North are closer in form, and may have been developed independently of the Central and West European bracelets. The heavy-ribbed type could have reached the North in Montelius III (Smith, 1957, 229,

Reinecke D and Montelius III), and may have contributed its ribbing to the bracelet already in evidence, with expanded terminal (Montelius, 1922, fig. 844, Period I) or without such terminals (Broholm, DO III, fig. 191, Period II; fig. 291-292 Period III, the former close in form to the gold Hillhead, Caithness bracelets). In the Late Bronze Age, penannular armlets with expanded terminals pointing outwards are rare. Broholm illustrates one, of C-section, as an imported piece, from the North European plain as will be shown, (DO IV, fig. 186, Lundforlund) and another with "oath-ring" terminals, slightly turned outwards, which is more properly discussed under cup-terminal bracelets or Type 3. However, two bracelets have been listed that are somewhat like the Covesea type 2a in ribbing at the terminals and expanded ends. One has a flatter terminal than is usual on Scottish specimens but the ribbing is limited to the area near the ends (Montelius 1922, fig. 1281, Period V), the other is of angular C-section but again has cast ribs only near the terminals (Broholm, 1946, p. 230, M170-170a, Hvedholm again of Period V). With some little modification these could devolve into Covesea 2a. The Fangel Torp find contained a plainer bracelet, with swollen terminals of Covesea 2, and this "oath-ring" form seems to be the most common among Scandinavian bracelets with expanded terminals, as opposed to the slight bending-out of the terminal seen in other areas (Broholm, 1946, M163). Other rings similarly related to the Covesea type are of the same or later date (Montelius V for Fangel Torp and for Grave 1048, Raklev, ibid. p. 84-85; Montelius VI for Brakker, ibid. M235) and exhibit a parallel style of terminal formation.

From the Meuse and Escaut areas, bracelets with large flat ear-like terminals seem to be connected with the Auvernier and Mörigen forms, while their cast ribs at the terminals is suggestive of the Scottish Type 2a armlets.(Mariën, 1950, 234 - fig. 20). As we shall see, this cast ribbing idea, with a few ribs at the terminal, also appears on specimens from North Germany, and the suggestion is that these Meuse-Escaut bracelets may connect the Swiss Late Urnfield bracelets with the North German armlets which are closest in form to the Scottish type. Mariën lists other bracelets of this Meuse type from the surrounding Escaut area, and notes that the absence of Lake Dwelling pottery from this area, and different bronze weapon types suggests trade rather than folk movement, in late Hallstatt B times.

Alternatively, these Belgian and North French bracelets may provide the influence for some of the southern British armlets which have flatter terminals than the Scottish specimens (e.g. Minnis Bay).

Turning now to the North German Plain, a number of bracelets have been recorded that can equally as well be considered the antecedents to the Covesea bracelet. Most of these are Late Urnfield or Montelius V in date, but earlier forms exist. From the Afferde, Kr. Hameln, hoard comes a bracelet with everted ends and incised ribbing in bands on the outer edge; the associations suggest a date late in Montelius IV (Sprockhoff, 1941, 95, abb 77, 6).

The Ehingen-Badfeld, Schwaben, hoard contains a thin bracelet of D-section with terminals slightly expanded outwards, and is as close in form to the Balmashanner or Gight bracelets as any previously noted although it is decorated (Germania, xxi, 1937, 10 - taf. 5, 14).

The associations include ribbed and perforated sickles, a thin Type 1 bracelet and Briest-type sword of Montelius V (also see Cowen, 1955, taf. 22, 14). This bracelet has a wide distribution but no differentiation is made between the plain and the outward-expanded terminal. (See Holste, 1935, 61ff for discussion of penannular bracelets of this thin section in Ostalpengebiet). A second hoard showing comparable bracelets, but these clearly of Covesea type, is that from Wallstadt, Amt. Mannheim, where the associations included a ribbed sickle, a Mörigen sword, a T-sectioned ring, rather like that in the Poolewe hoard. The bracelets are close in form to the Covesea type (Germania, XlX, 1935, 116- taf. 7, 2, no. 1-4, 7, 12-14), with slight expansion mainly outwards (no. 1, 4 especially); slight ribbing occurs on the backs of some of these, and the suggested date is late in Hallstatt B. The Saarlautern hoard also has bracelets, of similar date, close to the Covesea type, the terminals perhaps slightly too flat to be exactly similar, but the general form is close, and the bracelets have bands of ribs over their length, (Germania xxvi, 1942, 17- taf. 1, no. 48, also 44, 45, 50, 51). The Homburg hoard, discussed in connection with the Ardoe and Balmashanner bronze cast bowls, also has a C-sectioned bracelet with flat terminals of Covesea type, and a Type 1 bracelet with ribbing near the terminals. But the bracelet from this hoard that is closest to the Scottish form has no decoration or ribbing, and has terminals expanded outwards rather like those from the Auchtertyre hoard (Auh V, V, taf. 26, no. 446, 453 and 441 respectively). The Late Urnfield date is important for the Scottish Late Bronze Age via the Balmashanner hoard.

Further north, other bracelets, equally as close to the

Covesea type, have occurred in the equivalent period, the major part of Montelius V. The Barum, Kr Lüneburg, hoard contained a thin bracelet with expanded terminals of Type 1, but with ribbing near the ends (PZ XVII, 1926, 71- taf. 1a). Cast ribs occur in groups, or all around the outside edge, on bracelets from Ketzür, Westhavelland, found with an antenna sword; two of these bracelets have Covesea terminals (Sprockhoff, 1934, taf. 13, no. 8, 11). At Lötzen, Kr. Lötzen, C-sectioned bracelets with ribbed ends slightly turned out were found with a Möriger sword and dated by Sprockhoff to Montelius V or VI (ibid taf. 32, no. 1). And Vietkow, Kr Stolp, yielded an Auvernier sword and hanging bowl fragment with a bracelet of the ribbed and Covesea terminal form (ibid. taf. 37, no. 6). The Ostrhanderfehn, Kr Leer hoard has a Covesea bracelet with rib and dot decoration, included by Sprockhoff in his Montelius V group (1956, p. 207, abb 53, no. 1).

Other Type 2 bracelets occur in this area (e.g. Mestorf 1885, taf. XXX, no. 321, Schleswig), and most belong to this Montelius V period; the Warnow, Kr. Usedom-Wollin, hoard contains a D-sectioned bracelet with ribbing at the Covesea-type terminals, and is fairly close to the Scottish Type 2a (Sprockhoff, 1956, taf. 48, no. 4). Another armlet with similar terminal treatment, but lacking ribs, occurred in the Schmon, Kr. Querfurt, hoard (ibid. taf. 48, no. 6), and incised ribs are seen on the Hemmelsdorf, Kr. Eutin bracelet (ibid. taf. 46, no. 2), also of Covesea type. Pairs of cast ribs occur on the Gnewitz Kr Newstrelitz bracelet probably of Montelius V date (ibid. taf. 46, no. 1), and the same idea is seen on a gold bracelet, of Type 1 and with ribbing only near the terminals, from Granzin, Kr Parchim (ibid

taf. 39, no. 3), and with incised ribbing from Haselau, Kr. Regenwalde (ibid. taf. 70, no. 3). These however approach the "oath-ring" type again. Flat band armlets with ribbing near the everted terminals are also common in this northern area (Sprockhoff, 1956, taf. 41, no. 3, 5) and bracelets with Type 1 terminals and ribbing are also seen here (ibid taf. 41, no. 11, 10). A plain Covesea bracelet occurred in the Frankfurt/Oder hoard (ibid taf. 47, no. 6) and is close to the Scottish specimens.

The Plestlen, Kr. Demmin hoard contains a penannular bracelet with incised ribbing and terminals slightly expanded, possibly a Type 2, and this basic outline of rod thickness and terminal size is closer to the Scottish bracelets than the examples quoted from other areas (Sprockhoff, 1941, taf. 42, 6). The Vietkow, Kr. Stolp hoard has bracelets similarly ribbed but distinctively of Type 2 (taf. 50, 2; taf. 49, 6) and another even closed to the Covesea bracelet (taf. 50,3). Both these hoards are of Montelius V date.

The bracelet from the Ostrhauderfehn, Kr. Leer, hoard has everted terminals with ribbing, but is decorated elsewhere (Sprockhoff, 1956, abb 53, 1); it is also dated to Period V. The basic form of penannular armlet with everted terminals survived into later times, but are farther removed from the Scottish Covesea type (e.g. P.Z. xi, 152, abb. 11).

In Britain the distributions of Types 1 and 2 (Type 1 with terminals evenly expanded and Type 2 with terminals mainly expanded outwards) are completely different and are best treated separately.

No map exists of all Type 1 bracelets, but the comparisons

cited from Continental sources are few in number, and in addition to this, the type is so simple as to render these comparisons suspect. The abundance of these bracelets in Ireland (e.g. Armstrong illustrates c 50 from the National Museum, 1920, pl. xvii, with further finds since then, e.g. Kilmoyley JCHAS, 45, 1940, 56, and previous finds reported by Vallancey, 1770-1804) suggests that it is to Ireland we must turn for the source of the Scottish Type 1 bracelets.

Some of course are known from England, particularly in the south and east (Selsey, Sussex, Ant. J, vi, 1926, 308; Ant. J, xvii, 1937, 321; Wansunt, Kent, VCH Kent, i, 1908, opp. 336 with Type 2 gold bracelet; Beachy Head, Sussex, Inv. Arch. GB 40; Norwich, Way, 1849, 59) and from Wales (Grimes, 1951, 75, 84, 256, pl. ix), but generally the Irish finds predominate, overwhelmingly so with regard to the Scottish Type 1 bracelets.

The Scottish distribution is seen on map 20, and the Irish influence is clearly seen especially in the gold armlets. However, the principal gold-bearing deposits in Scotland lie in the Leadhills, between the upper Clyde and Nith, and this must be considered as a possible source for some of the Scottish gold bracelets.

Most of the Irish Type 1 bracelets are unprovenanced, but a map showing those with specified locations illustrates a spread of gold all over the island, the south-west receiving a goodly share. This suggests that the English gold objects, although in the south and east, may have come from Ireland.

The south Western Isles seem to have been in line with this trade from Ireland, if trade it was, and some penetration into the Forth area is perceptible. Here the gold work seems to have halted,

possibly as it became too expensive for the natives - because of the several exchanges already? - and bronze armlets of this ordinary type dominate the east coast from the Lothians to the Moray Firth.

The associated finds depend to a certain extent on the Covesea bracelets, particularly in Scotland, but such closed finds as have occurred without these Type 2 bracelets suggest a date from c.700 B.C. Heathery Burn has a bronze C-sectioned bracelet of Type 1 (not Proudfoot's Type 2, 1955, p. 34) and the Irish-British bucket there is of the seventh century; the wing-decorated axe links this hoard to Beachy Head, Sussex where gold Type 1 bracelets were found with a winged axe and carp's tongue sword fragment. The Tullach, Co. Clare hoard links a bronze armlet with a bag axe and a sunflower pin (Coffey, 1913, 81, fig. 70, 10). Finds from Scotland composed of either several gold bracelets, or bracelets with other objects, are numerous. Taking the gold association first, and without other objects, two finds, possibly burials, consist of two bracelets (Kilmallie, Inverness; Shieldhill, Perthshire), while other finds are more suggestive of hoards (five from Gallow Hill, Angus; over 36 from Coul, Islay, Argyll). We might suggest that this latter hoard was that of a trader attempting the Great Glen journey, in view of the position of the find, on the extreme western coast of the island, well away from the direct route to south-west Scotland. At Hillhead, Caithness, two gold bracelets were found in a stone bowl.

Other associations are more suggestive, including those with Covesea bracelets which, as detailed below, must date from c.700 B.C. Several gold Type 1 bracelets in the south of Scotland are associated

with gold Covesea types, and clearly are local renderings of the exotic type. As such they presumably are slightly later than the bronze Covesea type which lies in the seventh century.

Alloa, Clackmannanshire, has a true Type 2 armlet in gold, with associated Type 1, but the Ormidale, Arran, and Kirkhill, Berwickshire Covesea-type gold bracelets are only very slightly everted at the terminals and may equally be considered as slightly-influenced Type 1 armlets. Glen Aray, Argyll, has one Type 1 bracelet and two large Type 3C ornaments which also may be dated from the seventh century. The Stonehill, Lanarkshire, hoard contains two Type 1 and one lozenge-sectioned Type 4 armlet.

A unique form of bracelet with conical terminals was found with a similar form of torc, crudely fashioned (Burrell Collection, Kelvingrove). The small penannular rings in the Strond, Harris, hoard are of Type 1 form.

The triangular-sectioned gold ornament in the Dunbartonshire hoard, found with Type 1 bracelets, may also be assigned to Scottish LBA3, in the seventh century. The plain-ended bracelets from Duff House, Banffshire, are datable only if the associated pot is considered a member of the Covesea group, because the fragmentary bronze blade is of unknown Class.

A bronze Type 1 bracelet at Traprain Law illustrates the persistence of the form into the later stages of the Scottish Bronze Age, from c.500 B.C. A bracelet with similarly expanded ends, in bronze, is reported to have come from Caerlee hillfort, Innerleithen, Peebles, along with other objects of similar type (Chambers, History of Peeblesshire, 22, fig. 5, 37).

Another bracelet may have been associated with various socketed axes at Easter Essenside, Selkirkshire, but the find is of indeterminate authenticity and date. The bracelet from Monmore, Perthshire, is somewhat similar in form to the gold Type 1 armlet from Alloa, Clackmannanshire, with terminals fairly large and set close together. It is in a different class from the normal Scottish Type 1 bracelets, and approaches the Northern class of penannular armlets called "oath rings" except for its lack of hollowed terminals (e.g. Broholm, 1949, pl. 31, no. 2; Broholm DO IV, fig. 183; Sprockhoff, 1956, taf. 39, no. 3). The associations at Monmore do not conflict with these Montelius V or Late Urnfield dates. The Type 1 bracelets from Auchtertyre and Covesea, both in Morayshire, and Rehill, Aberdeenshire, were found with Type 2 and/or 2a bracelets and are thereby dated to the early seventh century.

An important association for a Type 1 bracelet comes from Orrock, Fife, where fragments of three bracelets were found with amber, bronze rings, a shale armlet, two small rings perforated at the side by rectangular holes (cf. Poolewe ring), and a swan's-neck sunflower pin dated to the late sixth or fifth century B.C. The large hoard from Balmashanner, Angus, contained, inter alia, Types 1 and 2 bronze rings, amber, an iron ring, and a cast bronze bowl dateable to the Late Urnfield on continental parallels. The contact of Irish and North European influence is seen here, Type 1 bracelets and ring money as opposed to Type 2 bracelets and the cast bowl. The noteworthy points about Type 1 bracelets in Scotland are their distribution, pointing to Irish gold, and their predominantly Late Urnfield - Montelius V

associations, but extending down to the last several centuries B.C. This dating, in connection with Irish-Scottish trade contacts in gold as in bronze, points to the shift in Irish contacts from south to north in the mid-first millenium B.C. (Hodges, 1956, 45 ff).

Type 2 bracelets show a complete contrast in their distribution, but again the Irish gold influence appears. Of Scottish finds of Type 2 and 2a, the north and east shows 21 in bronze, none in gold, while the southern areas have 4 in gold, none in bronze (map 21).

The origin of the type is clearly not Irish, as seen from this map and from Proudfoot's map of the British Isles (1955, map, 18), which shows the total absence from Ireland of this Covesea type. The use of local gold is suggested for the Scottish southern finds, but it is also possible that normal Type 1 bracelets from Ireland were beaten into Type 2; the Ormidale and Kirk Hill bracelets could have been thus treated, the Alloa specimen however, shows no sign of re-working. The idea of local gold work seems most reasonable. A few Covesea-type bracelets are recorded from English sites, but Heathery Burn (Proudfoot, 1955, 34) does not contain a bracelet of this type. The Shoebury, Essex, hoard (Inv. Arch. GB 38, no. 1) shows a C-sectioned bracelet, an import from Switzerland probably, and related to the Swiss Lake-dwelling forms already described (Keller, 1878, pl. CLV, no. 3; cf. pl. CLVIII, no. 6, and Shoebury decoration, also Vénat, Inv. Arch. F 6, 63, and Lindenschmit, 1889, taf. XXXVIII, 20). The Minnis Bay, Kent, hoard (Worsfold, 1943) contained a bracelet seemingly related to this type (pl. XII, no. 41) in its C-section, flat terminals and incised decoration, but other bracelets from the hoard (no, 39, 40, 42)

are of more normal Type 2. The carp's tongue associations, and bucket fragments, are of seventh century date. From Old England, Brentford, comes another bracelet of this type, with hollow section and grouped ribbing (Arch. lxix, 1917-18, fig. 16, p. 17-18). These bracelets, Shoebury, Brentford and Minnis Bay no. 41, seem unconnected, directly, with the Scottish type 2 bracelets. The bronze Type 2 bracelet from Usk, Monmouthshire (Grimes, 1951, 185, fig. 68, no. 3) seems however to be closer to the Scottish form with its round bar although its elongated terminals are again unlike the Covesea type. The Usk bracelet is similar to a gold one from Cottingham, Yorkshire (BM 1920, fig. 36 left) found with a coil-ended bracelet, and both these types occurred in the Wansunt, Kent, hoard along with plain Type 1 bracelets, all in gold (VCH, Kent, i, 1908, 334). The Patcham, Sussex, hoard also yielded Type 2 armlets, two of gold and one of gold on a copper base (Way, 1849, p. 59), and a C-sectioned bracelet with terminals like those from Usk and Cottingham comes from Aylesford, Kent (Jessup, 1930, pl. X). Gold bracelets from Tisbury, Wiltshire (BM 1920, fig. 37) are related to the Swiss Lake Dwelling flat-terminal varieties, and not to this English-Welsh group which is represented in Scotland only by the Alloa bracelet, all the others being of very slight Type 2 form. The Alloa bracelet of course is the only truly Type 2 gold armlet found in Scotland.

The Waddesden, Berkshire hoard contains two gold bracelets of flattened section, one with terminals expanded slightly outwards, probably unintentional (Ant. J, xxi, 1941, 162). The Longy, Alderney, Type 2 bracelet has flat terminals and connects with the Minnis Bay hoard in this respect (Kendrick, 1928, pl. VII). In Brittany, at

Vieuxbourg, a hoard of gold bracelets include two that might be considered as equivalents to the English-Welsh style of bracelet (Arch. XXVii, 1838, pl. 1, 5-6; also see Type 2 gold bracelet in Tresor Arch de l'Amorique Occidentale, 1886, pl. iv, fig. 5).

The disparity in distributions of the English-Welsh Type 2 bracelets and the Scottish Covesea type, with Cottingham the only geographical link, Minnis Bay and Alloa the only typological links, suggests that the two groups of Type 2 bracelets are not closely related; the English-Welsh bracelets seem to be more closely connected with the Swiss Lake Dwelling armlets, and described finds in France show the route plainly. The Scottish bracelets differ markedly in form and this plus their north-eastern distribution suggests contact more with the North European Plain than with South Europe; the typological comparisons made support this distributional conclusion, notwithstanding previous work (Benton, 1931, Proudfoot 1955). These North European bracelets are dated to Montelius V or late Hallstatt B, and provide a firm date in the seventh century for their associations in Scotland.

Nine closed finds from Scotland contain Type 2 or 2a bracelets; three of these are in gold from the southern half of the country, but only one, Alloa, shows a true Type 2 bracelet with terminals distinctly turned outwards. The Kirkhill Type 2 bracelet is close, however, to a bronze armlet from Hökendorf, Kr. Randow (Sprockhoff, 1956, taf. 41, 10) in its flat band and semi-circular terminals, but lacks the decorative markings.

The Rehill, Aberdeenshire, hoard contains bronze Type 1 and 2 bracelets, and Auchtertyre, Morayshire, links Types 2 and 2a with

a possible Type 1 armlet. The associated objects in these hoards are not distinctive. The combination of 2 and 2a is repeated at Covesea which also yielded false ring money and the well-known Covesea Ware. The view has been expressed that this pottery is nothing more than local ware and the armlets are merely debased Irish Type 1 armlets, this contact illustrated by the ring money at Covesea and Balmashanner. The differences between Type 2 bracelets and the Swiss bracelets are named as supporting evidence, and in this the view is correct because we have seen that North Europe yields better analogies for the Covesea bracelet.

But the evidence of Gight, with Northern necklets, and these bracelets, is surely of considerable weight in this regard.

A Late Urnfield dating is assured by the Balmashanner hoard where true inter-relations are seen, Type 1 bracelet, ring money and triangular-sectioned gold ornaments from the west, and Type 2 bracelets and cast bronze bowl from north Germany.

Wester Ord, Ross and Cromarty, is linked by its Type 2 armlet and fragmentary necklet to the Braes of Gight, Aberdeenshire, hoard where these forms occurred along with Type 2a bracelets (not all of Type 2 as Proudfoot asserts) and other objects. The necklets, formerly of late Hallstatt D affinities (Childe, 1935, 163-4) can be more easily connected typologically and chronologically with North German necklets, which occur in a restricted area at the transition from Late Urnfield to Hallstatt C, in the years around 700 B.C. The Covesea bracelets are also of this Late Urnfield date and, as described, must have their origin on the North European Plain.

Type 3 Ornaments:

The penannular bracelets with cup-shaped terminals have been grouped by Proudfoot (1955, 37-) into one class, Type 3, and while the contemporaneity of all these bracelets is not disputed, the great variation in typology, and seemingly in function, renders necessary a more explicit classification for these cupped or flared armlets. Hencken (1951, 60) subdivided these into dress-fasteners and trumpet-ended bracelets, without asserting any functional distinction, and Proudfoot (op. cit. p. 20) remarked that various members of his Type 3 might vary in their purposes, but neither attempted any sub-division of the general group. In 1849, Way (Arch J, VI, 60) discussed these bracelets and proposed a typological scheme somewhat similar to that adopted below. He worked from plain armlets to those with slightly dilated ends (our Type 1), then into slightly concave ends, cup-shaped, trumpet-like, and finally of cymbal shape. Armstrong (1920, 30) suggested five types of Irish penannular rings, two of which were ring money and dress-fasteners, but the other three formed some typological division of the bracelets under discussion, those with large cup-shaped discs, those with smaller cup-shaped terminals and more bracelet-like in form, and those with small flat-ended terminals (our Type 1). In view of this previous work, it is surprising that later writers did not adopt or evolve some scheme. Upon examination, three sub-types can be easily determined; first come those ornaments similar in outline to the Type 1 bracelets, i.e. still bracelets, with slightly concave terminals which are little larger than in Type 1. The important points are the bracelet form and slight concavity, and this is Type 3a. Next

come those ornaments still penannular in outline but with larger terminals distinctly cupped; these are relatively rare and are absent altogether from Scotland; they are still bracelet in form but their fairly large cups which emerge smoothly from the rod distinguish this Type 3b from the following Type 3c. This last is composed of those ornaments, no longer bracelet in form, which have very large trumpet-like terminals usually set more or less in the same plane, the connecting bar being not penannular but handle-shaped (Wilson, i, 1863, 460-462 for use of this term). They are not armlets, but have been described as such, and also as fibulae or dress fasteners, hair ornaments (Mann, 1923, 318), or as a form of money (Coffey, 1913, 70). It should be noted that three of the Scottish Type 3c ornaments (Ayrshire, Arran, North of Scotland) were said to have had a non-gold substance inside the terminals, and the suggestion has been made that these held precious objects such as amber or a stone. This would of course eliminate several of the possible functions listed above, but in the absence of further evidence, these objects must be considered merely as "ornaments".

The extreme examples, such as the Castlekelly object, nearly eleven inches across, should not be considered in attempting to determine the function of the normal type, as these are clearly exaggerated specimens probably of only ceremonial use or for prestige purposes, as probably occurs with other objects as well (e.g. Roseisle spearhead, length 19", socket too narrow for effective functional hafting, i.e. carried upright?).

Type 3c objects may be decorated, usually at the terminal edges and often on both inner and outer surfaces, and a few have

ornamentation on the outer parts of the bar. The details of manufacture of these trumpet-ended objects have been described by Maryon (RRIA, xLivc, 1938, 201-203), and a brief summary is all that is required here. The smaller Types 3a and b were made by hammering alone (e.g. Armstrong, 1920, pl. XVI, no. 299); apparently there is no evidence for the wholesale casting of these forms, but a form of run-on process was used for the attachment of cups of beaten gold to the central bar while the latter was being cast, or the beaten cups could be soldered on to the cast bar. In some, the bar is hollow or of C-section and in these no casting was necessary, merely the soldering together of the various beaten-gold pieces. Possibly a more advanced form of joining was a minor running-on of gold to link the sheet-gold pieces, hardly distinguishable from soldering. The hollow bar would be formed in the same manner, the edges being joined by one of these processes.

The distribution of these Type 3 bracelets or objects has been plotted for the British Isles by Proudfoot (1955, p. 18 B) but the lack of distinction between the bracelets of Type 3a and b and the trumpet-ended objects of Type 3c makes his map somewhat misleading. Nevertheless, the number of Type 3 objects in Ireland is sufficient to demonstrate that the Scottish examples must be derived from this source (c.90 from Ireland, 17 from Scotland, 11 from England). The Scottish distribution (map 22) is more or less limited to the south-west and compares with the spread of gold penannular armlets (map 20), both clearly proximal to Irish influence and gold.

Type 3a and 3b ornaments may be connected because of the theory that the rare Type 3b is merely an expanded version of the native

Type 3a, caused by the influence of the Type 3c objects that had their origins in a completely separate manner. Many of the Irish, and Scottish, Type 1 bracelets have terminals that approximate in everything but a slight concavity to those of Type 3a armlets (e.g. Armstrong, 1920, pl. XVII, Type 1 no. 337 and Type 3a no. 332; Type 1 no. 343 and Type 3a no. 325), and indeed it is sometimes difficult to separate the types from an illustration. In view of this very close typological concurrence, and distribution, the function of Type 3a is seen clearly to be that of a bracelet and the origin to be Irish. However, the suggestion that these, and Type 3b, are connected with Northern "oath-rings" should be noticed here. Sprockhoff has discussed the analogy between Irish penannular armlets and Northern oath rings, and commented on other workers' views, (1941, 98-99; 1932, 13, 55) and has dated the first oath-rings to Montelius IV (1937, 47-48). Penannular armlets such as are under discussion occur at this early date (e.g. Brøndsted, 1939, 186, fig. 174a; Broholm DB iii, 201), but generally a later date is suggested (ibid. 229, Period V, 259 Period VI).

In North Germany, oath rings are mainly of Period V (Sprockhoff, 1956, taf 39-40) and often have a hollow section with decoration on the terminals which are usually set close together, sometimes touching and joining (e.g. Broholm, DO iv, fig. 182, 183). The bronze bracelet from the Monmore, Perthshire hoard is fairly close in form to these oath-rings, although it lacks decoration and concave terminals. Nevertheless it is clearly distinct from the normal Scottish Type 1 armlets.

The later forms, Period VI, are generally formed of a rod with large terminals decorated as before, often linked, and the outline

of the object is generally oval (ibid. fig. 285-286). The same types occur in Sweden (Montelius, 1922, fig. 1304-1308). However, while these oath-rings are presumably contemporary with the Irish penannular armlets of gold, the typological comparisons do not support the contention that they are directly related. It is in the accompanying fibulae and Type 3c objects of the North and Ireland respectively that we can see some inter-relation. Coffey suggested that these two forms were somehow connected (1913, 68), and Hencken in his study of Scandinavian-Irish contacts (1951, 57 ff, fibulae 60) has accepted this relationship, although Mahr (1937, 394) doubted the connection.

The Scandinavian fibula appears in Period II (Brondsted, 1939, fig. 54c) but the true cross-grooved bow fibula emerges in Period IV (Broholm, DO IV, p. 65, fig. 54-55; evolved from fibulae like DO III, fig. 278, 280 of Period III). In this same period IV the spectacle fibula makes its appearance from the spiral-plated preceding type. The spectacle form has a narrow and solid bow and a thickly cross-grooved rim to the plates which replace the spirals (DO IV, fig. 56) and occasionally one plate has a protruding knob. In the succeeding period, V, the plate fibula emerges, hardly distinguishable from the spectacle form, with plates and cross-grooved rims cast together, the bow often hollow, and the pin head usually in the form of an open ring gripping the bow; the point is held by a hook or knob on the edge of the opposite plate. The decoration of all these fibulae is usually in relief, and consists of ovals, spirals, meanders and/or concentric circles. (DO IV, fig. 159, 160, 161; Sprockhoff 1956 taf. 49-51, including several with ducks in the round as occur on the Ballymena flesh fork). The domed

plates of these fibulae and their general similarity in shape to the Irish Type 3c objects seems to reveal some connection or influence. Hencken illustrates a fibula (pl. VIII, no. 5) which is extremely close in form to the Irish object (pl. Viii, no. 4), but for the lack of any pin on the latter. The rarity of these domed plate fibulae in the North, during Period VI, (Broholm, DO IV, p. 81) suggests that this contact took place in Period V, and other objects support this view (e.g. sunflower pins, amber). The similarity in decoration between an Irish Type 3c object (Wilde, 1862, p. 60, fig. 593) and Northern fibulae (e.g. Sprockhoff, 1956, taf. 52, no. 7) again suggests some relationship.

On the basis of the typological evidence at present assembled, it seems that the proposed connection of Irish trumpet-ended objects with Northern oath-rings is hardly justified, but with Northern plate fibulae is much more favourable. This of course does not solve the problem of the absence of any form of pin on the Irish objects, rendering their use as fibulae extremely doubtful. It is possible that Type 3c is merely an exaggeration of the local Irish Type 3a and b, some of which are decorated in like manner (e.g. Armstrong, 1920, pl. XVI, no. 308, Type 3b; pl. XV, no. 276, etc. Type 3c), while others retain the decorative style adopted from the "dress fasteners" (pl. XIV, no. 141ff; pl. XVI, no. 312, 314, Type 3b). In other words, Type 3c appears to be a local Irish development out of Type 3b (e.g. pl. XVI, no. 301, 302, 303, 297) with however considerable influence from Scandinavia in Period V,

Raftery discusses an Irish Type 3c ornament found near Bremen in an urn of the Harpstedt culture (Raftery, 1940, 56-57,

Sprockhoff, 1941, 98-99; ornament like Armstrong's no. 286).

Proudfoot has listed most of the finds associating Type 3 ornaments with other objects, and only those requiring special notice will be mentioned here (Proudfoot, 1955, 37-39; for references see this list). The contemporaneity of Types 3a, b, and c is assured by the Drissoge, Co. Meath (JRSAI, 1957, 125), New Ross ? , Co. Waterford, and Kilmoyley, Co. Kerry finds. Other objects found with Type 3 ornaments in Ireland include

Type 1 bracelets and amber beads, Banagher, Co. Offaly;

gold sunflower pin, Drissoge, Co. Meath;

"dress fasteners", Galway;

gorget; Gorteenreagh, Co. Clare;

gold sun disc, Lattoon, Co. Cavan;

socketed axes, Mountrivers, Co. Cork;

triangular-sectioned ornaments, Gorteenreagh, Co. Clare.

English Type 3 ornaments are rare, but on two occasions have been found with coil-ended bracelets, Morvah, Cornwall and Tisbury, Wiltshire, the former site also yielding a lozenge-sectioned bracelet and the latter, Swiss-like bracelets with C-section and flat terminals spread outwards. The Irish ornaments here seem to have encountered types not represented in Ireland.

The Scottish associations show a similar picture to that of the Irish finds, suggestive of Montelius V or Late Urnfield times. Two large Type 3c ornaments occurred with a Type 1 bracelet at Glen Aray, Argyll (Inverarary Castle), another with a triangular-sectioned ornament at Whitefarland, Arran (Kelvingrove Museum), and one with an unknown

gold ornament in Islay. Two were found together in Galloway in the 18th century. Only two Type 3c ornaments in bronze have been found in the British Isles, both from Scotland, and this follows the usual pattern of Irish gold influence in the south copied in bronze in the north. One from Poolewe, Ross-shire, was associated with a socketed axe of probable Irish inspiration, a T-sectioned ring (not from a cauldron as Proudfoot and Hawkes assert), and a small hollow ring with side perforation, as well as other socketed axes. The perforated ring is repeated in the Derryhale, Co. Armagh, hoard which contained sunflower and cup-headed pins of Scandinavian Period V.

T-sectioned rings occur in continental Montelius V contexts as well, but usually in groups. A gold Type 3c ornament was found in the North of Scotland with an urn, both now lost, but it is tempting to guess the identity of the pot if the association was true.

Only one bracelet with lozenge-section has been recorded from Scotland, in the Stonehill, Lanarkshire, find, but the association with a Type 1 gold bracelet may be of some value in establishing the chronological position of these commoner armlets. Some lozenge-sectioned bracelets occurred in Spanish hoards, described by Proudfoot (1955, p. 25-), and dated by their carp's tongue associations to the seventh century. These bracelets may or may not have direct connections with the British Isles, and associated finds nearer to Scotland are obviously of more value.

Lozenge-sectioned bracelets are linked in the South of England with Type 3b armlets and torcs (Marvah and Towednack, Cornwall, Holywell, Dorset bronze bracelet and torcs), but this contemporaneity with these armlets, and with those of Type 1 at Stonehill, is to be expected in view of the Downpatrick hoard which contains three lozenge-sectioned bracelets, several more of Type 1 and two intermediate forms (pl. 1, no. 4, 5) which suggest that the gold type as seen in the British Isles, at least, is a local product. The Spanish finds too may be of Irish gold. However, the bronze examples known from the South of England are in a different category. A basal-looped spearhead (Brading, Wight), a cast bronze torc (Ebbesbourne, Wiltshire), and objects of similarly early date at Monkswood, Somerset, suggest that the bronze bracelets of lozenge-section are of the Glentrool horizon, or TBB. The lozenge-sectioned bracelet, in bronze, thus appears to be a type belonging to the TBB phase, but its relationship with similar objects in gold is less clear. Possibly the same situation as regards ribbon torcs applied, the development of the bronze type into gold work appearing mainly in the Highland Zone at a somewhat later date, with the expansion of the Irish gold industry in this direction.

PENANNULAR ORNAMENTS WITH TRIANGULAR SECTION

No typological study of triangular-sectioned penannular ornaments has been made since Maryon's work in 1939 (107-108); in this, he proposed five types of ornament, based on technique of manufacture and decoration. As no chronological distinction can be established for these types, they need not be studied in detail, but the following descriptions are based on an elaboration of this work. The Scottish ornaments of triangular section, eleven in number, have been recently listed with the other British and Irish specimens (Proudfoot, 1955, 42-43), but no typological discussion was attempted. Briefly, the ornament may be composed of from three to six pieces of beaten gold, depending on the treatment of the outer edge and the presence of end pieces. The three-piece ornament has two face-plates joined by hammering or soldering and an inner cylindrical lining attached in like manner (e.g. Arran). Both ornaments in the Arran find, one of this type and one of Type 3c, were formed entirely by hammering.

The addition of two end pieces to enclose the hollow triangular-sectioned area makes a five-piece ornament (e.g. Boghall). When an outer-edge wire is present, it may take the form of a slit hollow tube into which the plate edges are fitted (e.g. Monzie), or a wire which is soldered to the plate edges (e.g. Balmashanner). Without end pieces this becomes a four-piece ornament (e.g. Mull), with them a six-piece (e.g. Gogar). Another major typological difference is concerned with the character of the plates, which may, on larger specimens, be composed of numbers of fine gold wires soldered together (e.g. Mull) or may be simply a sheet of beaten gold (e.g. Dunbartonshire). The

plates may be plain (e.g. Gogar) or be decorated by concentric ribbing in repoussé work (e.g. Glenluce), the effect of which is achieved on the wire-plate ornaments (e.g. Monzie), or by an incised pattern which takes the form of concentric bands filled with alternate areas of transverse lines and plain spaces (e.g. Balmashanner). Two types of decoration not occurring on Scottish ornaments are concentric borders of dots in repoussé (e.g. Hasting Beacon, Sussex, references in Proudfoot) and concentric circle decoration (Cooper's Hill, Northumberland).

The largest ornaments of this type come from the Gorteenreagh hoard and are four-piece with incised concentric decoration resembling the effect of soldered wires.

The distribution of these ornaments (Proudfoot, 1955, 18, with additions possible, e.g. Savory, 1958, 14) is unfortunately incomplete, as many of the Irish specimens are unprovenanced. Over twenty are recorded from Ireland, eleven from Scotland, eight from England, four from Wales and several bronze copies from the Marne. The Irish finds are mainly in the west-central area but little can be deduced from this because of the number of unlocated specimens. The English finds are southern, possibly connecting links with Ireland and the west French ornaments; and the Scottish distribution (map 23) equals that of Type 3 and Type 1 gold bracelets, the south and western spreads pointing to Ireland. These triangular-sectioned ornaments are of course more sparsely scattered, but the most northerly find is Balmashanner, where, as we have noted previously, Irish and North German influences seem to have met. The Scottish distribution, plus the relative numbers in the various areas, and the fact that it is gold in question, all seem to suggest Ireland.

The French finds are dated to the Late Urnfield and show further British connections (Favret, 1928, 16-). Sheet-bronze fragments in the Vénat hoard (Charente) are linked with carp's-tongue-complex dating (ibid. 24, fig. 3, 1-3) and the Choussy hoard (Loir-et-Cher) contained a British socketed knife with a solid cast bronze copy of the triangular-sectioned ornament (ibid. 24, fig. 3, 4). The Saint-Martin-sur-le-Pré hoard yielded eight ofnthese objects, of gold plated sheet bronze on a clay core (ibid. 17, fig. 1). Associations of Jensovice-Kirkendrup and Stillfried-Hostomice cups suggest a Late Urnfield date (ibid. 27, fig. 4).

The English and Welsh finds are of considerable interest. At Heathery Burn, a plain ornament of this type is dated to the seventh century by its associated bucket and wing-decorated axe. The Feltwell Fen, Norfolk, hoard contains a fragment of one of these ornaments dated to the Late Urnfield (Inv. Arch. GB 35).

This dating to the Late Urnfield contrasts with that from Harting Beacon, Sussex, where the ornaments were adjudged contemporary with the construction of a fort dated to Iron Age A2. That such rare and valuable objects as these were handed down as heirlooms is not out of the question, but the association is very late. The associations quoted for the ornaments from Cooper's Hill and Highdown Hill are not truly established (Proudfoot, 1955, 43).

The contemporaneity of these objects with Type 3c ornaments is established by the Gorteenreagh, Co. Clare and the Whitefarland, Arran finds, and with Type 2 bracelets at Balmashanner.

The Orme's Head hoard contains two ornaments, of

different sizes, with a looped palstave and a socketed awl (Savory, 1958, 14); this hoard is considered as a part of the Guilsfield phase because of the comparable palstaves, and because of the absence in Wales of associations with dress fasteners and pins, but this evidence is somewhat negative and inconclusive.

Connections with Scandinavia appear in the concentric decoration associated with these triangular-sectioned ornaments, at Gorteenreagh on the gorget (see Powell, 1953, 161-), at Mull on the sun disc, and on the unique ornament from Cooper's Hill, and this too suggests the Late Urnfield-Montelius V period.

Scottish gold associations include a Type 3c ornament (Arran), Type 1 bracelets (Dunbartonshire), dress fasteners (Mull and Monzie), sun disc (Mull), fragmentary lunula (Monzie), false ring money (Monzie and Balmashanner). The Balmashanner hoard contains in addition, bronze Types 1 and 2 bracelets, amber beads and a cast bronze bowl, all of which subscribe to the Late Urnfield - Montelius V period. A bronze penannular ornament of triangular section was found in Traprain Law, and may have been covered with gold plate. The settlement here has been adjudged late in Late Bronze Age Scotland, but the lunula from Monzie, while an antique, and the sun disc from Mull, suggest an earlier period. Sun discs are found in South Scandinavia and Schleswig-Holstein, and in the British Isles. The special ornament seen on such as Trundholm is Northern only (Brondsted, 1939, 89) and does not occur in the West, while the hatched pattern seen on the Mull and Irish discs is western. These Northern discs are dated generally to Period II, yet the smaller Western discs seem to be later, the triangular-sectioned ornament and

dress fastener of Mull and the Type 3c ornaments from Lattoon suggesting this, although the Lansdown, Somerset disc (BM, 1920, fig. 91, p. 89-90) was found with Cinerary Urns in a stone cist under a barrow and is earlier. Generally, however, the Western sun discs are stylistically later than the Northern discs, and the type seems to have originated in the North amd passed at a later date and stage to Ireland. Lattoon appears to be related to Trundholm yet is devolved, and the Irish gorget W20 also shows some of this influence in terminal decoration; the Borrisnoe gorget also seems to be related to Lattoon in this regard. The transverse division occurring on some sun discs, e.g. Trundholm, leading from the central section to the circumference and filled with decoration, is seen on some Herzsprung shields and suggests some continuity of idea; possibly the guttered cup-and-ring marks are also related.

GOLD "DRESS-FASTENERS"

Only two "dress-fasteners" have been recorded from Scotland, and are without much doubt Irish in origin. These "dress-fasteners" are of Armstrong's Type 1 (1920, p. 30), with flat terminals, at more or less right angles to one another, the bow decorated by longitudinal corrugations, and generally ornamented near the juncture of bow and disc with criss-cross lines. The Irish specimens vary greatly in size (ibid. pl. XIV, no. 14 - 174) and the terminals may be extremely large (no. 151, with small loop) or non-existent (no. 170 of ring-money form but dress-fastener decoration). Their use as dress-fasteners is generally accepted. From Ireland, Armstrong recorded over thirty examples, and others added to this (e.g. UJA, 1944, 62; NMA Edinburgh, 5) emphasize the Irish centre of the type. A hoard from Belfast, Co. Antrim, contained three of these dress-fasteners and a socketed bag axe, but this is the only associated find noted from Ireland (Arch. lxi, 1908, 153). The Monzie, Perthshire hoard is composed of a dress fastener, a piece of false ring money, a triangular-sectioned ornament, and a fragmentary lunula presumably an antique. The other dress fastener from Scotland appears in the Balmashanner, Angus hoard, and the important associations are bronze Type 1 and 2 bracelets, amber, triangular-sectioned ornaments, and a cast bronze bowl, suggesting a Late Urnfield-Montelius V date.

RIBBON-TORCS

The gold ribbon-torc has not been found in association with other objects in Scotland, and its chronological position in the Bronze Age is difficult to determine. A considerable number are known from Ireland, and the mere fact that gold is involved suggests some Irish connections with Scotland (Armstrong, 1920, 22-23). Cornish gold may of course account for some of the Highland Zone torcs although this suggestion has not been advanced with much emphasis (Ant. J, XVII, 1937, 198-9; Hawkes, 1932, 181; Savory, 1958, 9).

The Scottish distribution (map 24) bears little resemblance to that of gold objects dated securely to the Late Bronze Age (maps 20 and 22). The possibility then that ribbon-torcs are not Late Bronze Age in date must be examined.

The single twisted ribbon-torc is essentially a simple form, and has been judged typologically earlier than those torcs made from the joining of a number of bands to form a four-pointed or three-pointed section (Hawkes, op. cit., 182-183).

As this latter class of torc, the Tara type, has been found in association with palstaves and rapiers at Grunty Fen and Stretham, Cambs., the obvious conclusion is that the simple ribbon-torc is Middle Bronze Age in date. However, this is based on a typological development, not proved by closed finds and further examination shows the erroneous nature of this evolutionary scheme.

Of the several classes of more evolved torcs, only one is represented in Scotland, and that by only one example. The gold torc

from Slateford, Edinburgh, is a member of the Tara class (cast NMA). While Fox maintains that Tara torcs are Middle Bronze Age in date (1952, 49-), the technical studies of Maryon show that the use of gold solder on torcs of this class, as on triangular-sectioned ornaments, dress fasteners and Type 3c objects, is generally of the Late Bronze Age.

The twisted-bar torcs, also of this general Tara class, but formed of a triangular or rectangular sectioned bar, were assigned to the Late Bronze Age by Hawkes in 1932 (185-), and their association at Llanwrthwl with a more elaborate Tara screw-torc confirms this dating which was based at the time on very few associations (Savory, 1958, 6ff), if Maryon's studies are accepted.

These solid-bar torcs have been connected by Savory to the twisted bronze torcs that are a feature of the TBB phase in Southern England. These torcs are cast, but otherwise are close in appearance to the gold twisted-bar torcs.

Central European twisted ornaments are of earlier date as in the Regensburg hoard (Germania, 1938, 7- abb 1) and Trassem find (Behrens, 1916, 19, abb 6), dated to Reinecke A2. But the closest analogies to the British and Irish twisted bar torcs are in North European objects. Kersten has classified these twisted bar neckrings of early Bronze Age date (1936, 36- , 120), and his form 2, with hooked terminals, seems the duplicate of the twisted bar necklets in the TBB group. These date to Period II or III, mainly III.

The distributional surveys of Hodges (1956, 45 ff) have shown that his phases in the Irish Late Bronze Age witnessed a shift in the export of Irish gold and bronze material roughly from south to north,

and that this change occurred not at the transition from the Middle to the Late Bronze Age, as Fox maintained (1952, 49-), but between Phases A and B in the full Irish Late Bronze Age. The distribution of Tara torcs is distinctly southern, with only the Slateford find north of the Humber apart from the Irish torcs (Savory, 1958, 58), and this suggests that the Tara class belongs to the earlier part of the Late Bronze Age. The fact that many of the British torcs are coiled (Llanwrthwl, Egerton Hall, Cheshire, Slateford) points to compression for ease of transport, a feature rarely seen on Irish Tara torcs.

It therefore appears that both distribution and typology support the suggestion that the gold torc, whether of Tara class or of bar class, belongs most satisfactorily to the early part of the Late Bronze Age. The dating of the ribbon torc is still difficult, however, because of the rarity of associated finds. Childe assigned these to the Middle Bronze Age because of their simple form and their association with a lunula at Largatreany (Childe, 1949, 125). This, however, appears to be merely a case of survival of the lunula into a period later than its normal occurrence, as seen also in the Monzie find.

Hawkes suggested a Middle Bronze Age date for the ribbon torc because of its simple form, assuming that this torc led into the Tara class (1932, 182). The Winterhay, Somerset, hoard contained a looped and midribbed palstave and several gold ribbon-torcs, and may be considered as showing the ribbon-torc in the TBB phase which is generally accepted as of the Late Bronze Age. The palstave type occurs in several of the Somerset hoards along with bronze ribbon-torcs as at Edington Burtle and Wedmore, and this association suggests that the gold

ribbon-torc may also be of this TBB date.

The Law Farm hoard also yielded a fragment of a bronze ribbon-torc along with its many gold torcs. But the distribution of gold ribbon torcs is distinctly northern (Savory, 1958, 58) and if Hodges' distributional phases are accepted, then the gold ribbon-torc should be of his Phase B, from c.650 B.C.

The suggestion must be that gold ribbon-torcs had their origin, in the earliest phase of the Late Bronze Age, in the twisted bronze ribbon-torcs, but that they survived into a later period, during which they were transformed into gold extensively, and were exported in quantity to the north. This accounts for the large hoards of these in the North, including Scotland (map 24), and fits with the large-scale export of Irish gold in Late Urnfield - Montelius V times.

The Heyope, Radnor, torcs are thicker than the normal ribbon-torcs and their terminals also recall the Tara class, so that this southern find may be earlier than the main body of ribbon-torcs (Savory, 1958, 13); nevertheless the disparity in distributions of these torcs and other gold objects probably requires more explanation than is here attempted. The evidence suggesting a date early in the Late Bronze Age is equally as convincing as distributional studies.

The loose nature of the twist on the Heyope torcs is matched on a few Irish examples but the Scottish torcs are all with one exception (Rannoch), tightly twisted and resemble the majority of Irish specimens. The only apparent differences between Scottish and Irish ribbon-torcs lie in the treatment of the terminals.

The Largatreany hoard contains torcs most of which have knobbed terminals, with circular or flat bars ending in a conical knob

(Armstrong, 1920, pl. XIII, 120-125); one torc has flattened bar terminals without knobs (122). The Derravonna hoard contains torcs with either knobs or disc terminals (flattened knobs?) and the Inishowen find also shows knobbed or disc terminals (ibid. 118-119 and 126-134; 108 and NMA FE—).

The hoard from Lower Largo, Fife, may be connected typologically with these Irish finds, as the terminals on all the surviving torcs are of this conical knobbed variety. The Little Lochbroom torc is also of this type.

However, the Rannoch, Coulter, and other single finds show terminals without knobs, merely rectangular - or round-sectioned bars recurved in the usual fashion. The Belhelvie parish torcs, possibly all from one hoard, have similar bar terminals either rounded or flattened. The Heyope torcs have plain slightly tapered ends, and enhances the suggestion that the plain terminal is earlier than the knobbed variety.

The great torc hoard from the Law Farm, Morayshire, is unlike that from Lower Largo. Of twenty-two torcs located and examined, nineteen belong to the simple bar-terminal type, either rounded or rectangular in section, while only three show the knobbed feature. One torc has both a disc-like terminal and a plain bar-terminal, and another has round bar-terminals that near the great-bar style of Tara torcs. This plain bar nature of the hoard, and the associated bronze ribbon-torc, suggest that The Law Farm hoard is earlier in date than the Lower Largo find.

In general however, no chronological distinction of any

magnitude can be made, because of the fact that the two types of terminal are found together at The Law Farm and Largatreany. Nevertheless, the differences in terminal-treatment of Irish and Scottish torcs is striking; over 90% of Irish torcs are knobbed, about 75% of Scottish torcs have plain-bar terminals, and this suggests that some regional stylistic differentiation existed. The Scottish torcs may be of Irish gold and manufacture, or may be purely local products with Irish or local (Leadhills) gold, or may be Irish torcs reformed by Scottish owners or traders. The chronological distinctions appear to be the most satisfactory, that the plain-bar torcs are earlier as they lie closer to the bronze prototypes.

RING - MONEY

The term "ring-money" has been in use for a century and while it must be emphasized that no evidence exists for the employment of this term, it is convenient to refer to these small gold penannular rings as ring-money until another use has been demonstrated. The Scottish finds have been mapped as usual, (map 23), but the small number and scatter do not allow the drawing of any conclusions. A survey of ring-money in the major museums of the British Isles, and a search through the literature has enabled certain statements to be made, and while it should be mentioned that the totals quoted are by no means complete, it is believed they nevertheless present a reasonable picture of the situation.

Ring-money may be divided into several classes, the major distinction being of course, "true" or "false" - whether or not this has anything to do with money is debatable, because the false ring-money, gold plate over a copper or clay core, is usually easily distinguishable from the solid gold objects by the careless application of the plating. However, on one hand there is true ring-money, of solid gold, on the other there is false ring-money, usually with copper core, sometimes clay, rarely lead. A few of this second class may never have had a gold covering (e.g. Toroston Coll; Ireland, NMA FF7 less conclusively).

Both these classes are more or less similar in shape, with circular section, although variations in size occur, and some terminals are tapered while others remain of equal thickness (Wilde, 1862, fig. 621-622).

While some of this ring-money, the Irish type, occurs in England (e.g. Way, 1849, 56, Curwen 1954, 209), a more common form in the south of Britain is a penannular ring of flattened or even hollowed section (e.g. BM 1920, fig. 43, 44), and this is the English type which need not concern us further except to mention that no examples of this type occur in Scotland or Ireland as far as can be ascertained; some, however, have been found as far north as Flodden, Northumberland (Cat. Alnwick Castle, 1880, 3).

Another type of ring-money is formed of a twisted band or bar of gold (e.g. Armstrong, 1920, pl. xiv, 224-5; BM, 1920, 53) but the numbers are small; they are considered as earrings by some authorities.

Class I ("true") and Class II ("false") ring-money may further be divided by the presence or absence of decoration. The majority of objects of both Classes are plain, but a certain proportion are banded. Armstrong (1920, p. 34) described these latter as being "composed of alternate rings of gold and of some dark metal .... these stripes are formed by filling shallow indentations in the gold ...", but he could not identify the substance. Maryon (1939, 106-107) in typing "hair-rings", stated that the inlay was of meillo with sulphur and lead traces, while other objects had inlays of silver. This decoration has been called vermicular segmentation, caterpillar striping, and spiral decoration, but banding seems to desdribe the sub-class.

Other forms of decoration are seen on Irish ring-money, either small punched dots or longitudional incised lines (Armstrong, 1920, pl. xiv, 226, 227), and the Lough Gara ring-money, with lead cores

have incised decoration recalling the grouped ornamentation of gold dress-fasteners, but these may be grouped with the banded sub-class. The above may be conveniently summarized as follows:

Irish type	Class I (true)	a	plain
		b	banded
	Class II (false)	a	plain
		b	banded

The figures noted below for the various sub-classes are necessarily incomplete, especially for England, but the important totals for Scotland and Ireland are either complete or sufficiently so to enable proper conclusions to be drawn.

Ireland	Ia	50	Ib	14	IIa	20	IIb	8
Scotland		1		-		17		-
England		7		3		1		-

The outstanding point about this table is the vastly different proportions of true and false ring-money for Ireland and Scotland, Class I in Ireland comprising 69% of the total, in Scotland only 6%.

Associated finds containing ring-money are not common in Ireland. The Belfast hoard of a socketed axe and small penannular rings does not come within this discussion, as the objects in question are clearly devolved dress-fasteners (Arch. lxi, 1908 153, pl. xviii, 150-152). A small hoard of three pieces of ring-money come from Lough Gara, and may be considered as contemporary with the crannogs there, dated to the fifth century or later, although other opinions would place this not far from 600 B.C.

Scottish associations for ring-money are more interesting as they include Type 2 and 2a bracelets at Covesea as well as distinctive pottery, and similar Type 2 bracelets and cast bronze bowl at Balma-

shanner, all of these continental objects dated to the Late Urnfield, probably near 700 B.C. At Balmashanner, other western or Irish-type objects include triangular-sectioned ornaments, such as occur on the Monzie hoard which is purely Irish in inspiration, with ring-money, dress fastener, lunula and triangular-sectioned ornament.

NECKLETS

The necklets from the Braes of Gight hoard have long been considered as the latest in a series of Continental imports; this has been due to Childe's identification of the more elaborate form (pl. 17) with Late Hallstatt necklets of the middle Rhine and Alsace. His Selz-Dangstetter culture (1935, 164) contains annular rings of bronze with various arrangements of attached loops. These are illustrated by Schaeffer (1930, p. 21-223, especially 217, and pl. XXVIII) and assigned to French Hallstatt II (D), but four main types can be distinguished. From Ohlungen (ibid. p. 119, fig. 106a, tumulus 3II) a ring of 7" diameter contains three groups of three loops spaced evenly around the circumference. Another ring from the some site, tumulus 3I (ibid pl. XXVIII) has eight involved loops set close together on one arc of the circle, with two groups of three mouldings placed symmetrically in the otherwise plain area. Another form has seven loops spaced evenly around the circumference except for a wider area presumably at the back of the ring (ibid. p. 105, fig. 92c, Harthouse, tumulus 10I), and the final form to be mentioned, from Maegstub, has seven loops set close together (ibid. p. 139, fig. 122, tumulus 1 II). The style closest to the Gight necklet has rings spaced more or less evenly around most of the circumference, Harthouse 10 I, but the greater loop size of Ohlungen 3 I also suggests the Gight form. Further finds of this type of necklet, these from the middle Rhine, are of similar Late Hallstatt date. From Eckelsheim an annular ring of 8" diameter has three loops placed fairly close together with knobs placed both on the loops and on part of the ring itself, repeating the knobbed evolved loops of

Ohlungen 3 I (P.Z. xi, p. 174, abb 17, no. 1).

Other necklets of this closed type come from Desloch (Westdeutsch Zeitschrift, Xl, 1892, 247, taf. II no. 7) and Hermeskeil (Nass. Ann. xliv, 208), and are dated by associations to the Late Hallstatt (D). Childe considered that the Braes of Gight necklets were derived from this type, and must therefore date to the sixth or fifth centuries B.C. The evolved Gight necklet is penannular, with a diameter of 7", and originally had eighteen loops attached by double-ribbed ring holders to the outside of the necklet; moreover the ends of the necklet had similar double-ribbed holders carrying larger rings, which may have been joined by a cord when worn. The other Gight necklets lack the external rings, but the terminal treatment is similar, although somewhat simpler.

The fragments from the Wester Ord hoard appear to belong to a necklet of this multi-looped type, although somewhat different in details. The loops must have been extremely thin and probably held, if anything, objects of light weight. None of these loops is preserved, nor are the terminals.

It should be noted that the term necklet is commonly used to describe objects as these, which may well have been head-pieces or diadems. The diameter of some of the annular Late Hallstatt rings suggests this latter use.

From the descriptions of the Gight and Hallstatt necklets, the differences seem more evident than the similarities; the Scottish form is penannular and has free swinging rings, and these features alone seem to exclude Gight from the middle Rhine and Alsace group, which

appears homogeneous. It should be mentioned here that the "Selz-Dangstetter" necklets are later in date than the Hunsrück-Eifel culture of the same area, discussed below.

Another necklet, this from East Prussia, has been cited as an additional parallel to the Gight find (Piggott, 1953, 185); the object in question is considerably closer in form to the Scottish necklet as it both is penannular and has small loops or ring-holders around its outer edge. But these ring-holders are set in the same plane as the necklet, as in the Late Hallstatt necklets already described, unlike the Gight holders which allow the rings to lie flat with the necklet; the reason for this feature in the Wangnick, East Prussia, specimen must be that the objects to be attached directly to the loops were not metal rings (confirmed by the perfect preservation of the loops and no sign of rings) but probably were ties of some sort that affixed beads or rings to the necklet proper. One of the annular necklets from Ohlungen, Alsace, has various pendants attached in this fashion (Schaeffer, 1930, 223, fig. 166c) and the Wangnick necklet is probably of this type (Ebert, ix, taf. 220d). The date of this object is Hallstatt C, probably the late seventh or sixth centuries B.C. A necklet from Kodram, Kr. Usedom-Wollin, has metal rings of varying sizes hanging directly from the bar (Sprockhoff, 1934, taf. 10, 10 with fibulae and Nierenknanf sword of Period V).

Now while the Prussian necklet lacks any form of terminal attachment at all, it is considerably closer to the Gight necklet than the Middle Rhine specimens which are of later date. The suggestion thus presents itself that the Gight necklet is not a later elaboration of the already late Middle Rhine necklets, as Childe

asserted, but that the process worked in reverse, and the Hallstatt D necklets of Alsace and the Middle Rhine are either a devolution of necklets of Gight type, not from the Aberdeenshire example directly of course, or are a separate development entirely unconnected with Gight. Either of these explanations would account for the disparity in the contents of the Braes of Gight hoard, with Late Urnfield - Covesea type armlets and "Hallstatt D" necklets. While a Hallstatt survival of Type 2 armlets has been mentioned in our discussion of the type, the example quoted by Childe (1935, 164, note 4; Schaeffer 1930, fig. 98c), is not of Type 2, and close parallels are difficult to find. In addition, the evidence from other hoards with Covesea bracelets asserts the Late Urnfield dating of the type. Another object in the Gight hoard, the girdle-chain fragment, was quoted by Childe as illustrating the Hallstatt date of the find (1935, 165) but he also stated that Urnfield associations occur (1929, p. 344, fig. 203, of his Austro-Bavarian group. Another example of a girdle-chain occured in the Danzig hoard (Sprockhoff, 1956, 17, taf. 71, 1) dated to Period V and equally as close to the Gight fragment. The Booleybrien, Co. Clare, hoard possesses a somewhat similar chain, the rings joined by small flat penannular links as seen at Gight; associations include a sunflower pin, socketed axes and rings with side perforation. The type also occurs in France in a form very close to that of Gight (Gallia, XV, iii, 1957, 76, fig. 13, probably from Ribiers).

Thus a Late Urnfield date for the objects associated with the necklets is hardly in doubt, and these latter must be earlier than the Alsace and Middle Rhine examples. As the necklet from Wangnick is

closer in form to the Gight necklets than to the Rhine examples, its earlier date is also substantiated; whether or not it is connected in any direct way with Gight is doubtful however, as in the intervening area, the North European Plain, a series of necklets occur, dated to Montelius V, which must be the form from which both the western (Gight) and eastern (Wangnick) necklets are derived.

In Period IV of the Northern Bronze Age there appears a hooked necklet, formed of a C-sectioned rod with cross-grooving (Broholm, DB, iii, 1946, e.g. p. 186 M30, Seden), and slightly more elaborate forms also occur in this early Late Bronze Age. Some are formed of three such rods, linked together at their terminals, and fastened by a short bronze rod which clips into or hooks onto the terminals (ibid e.g. p. 194, M 46, Eilby, p. 204 M 82, Hjorthede). Similar forms appear in the succeeding period, V, which is contemporary with the later stages of Urnfields. One from Wurchow, Kr. Neustettin has two cross-grooved rods with coil-loops at the terminals (Sprockhoff 1956, taf. 21, no. 1). More evolved forms, still composed of these cross-grooved rods, have bars separating the rods or bands, and appear in varying styles in this same period (ibid. taf. 21, no. 2, 5, 6; tafel 22); most of these have a coiled-loop at their terminals, but some have a simple bar-loop somewhat like a ring-holder (ibid. abb 33, Beverdick, Kr. Neustettin), and other variants also occur, most of which are completely dissimilar to the Gight necklace (ibid. abb 34, taf 23). A necklet from the Babow, Kr. Cottbus, hoard lacks the separating bars, and the four bands lie close together, but from the outer band spring seven evenly spaced loops, the central five of which each carry a ring holding two pendants; the loops lie in the same plane as the necklet

proper as do the pendants (taf. 26, 1).

However, another form of the necklet with multiple rods separated by bars has small loops attached around the outer edge of the necklet, either free-standing as at Kl. Drebnau, Kr. Fischhausen (abb. 34) or protected by a thin rod at Schwachenwalde, Kr. Arnswalde (taf. 21, 3), or the loops may stand out from the outer band, as at Mandelkow, Kr. Soldin (taf. 21, 4).

The necklets with multiple touching loops attached to the outer edge (taf. 21, 3; abb. 34) have parallels in the necklet from Tetzitz, Kr. Rügen (taf. 25, no. 2) which shows this important feature although its basic form has been reduced, simplified, to a single bar, of penannular form as usual, but without any loops or spirals at the ends. This necklet belongs to Sprockhoff's Ziemitzer Halskragen (p. 143-144; abb. 38; tafel 25, no. 1, 2) which is limited to three examples, the Tetzitz, Ziemitz and ? Kr. Rügen necklets. The Ziemitz specimen has a single bar of comparable section to the other two, with triangular loops spring from the outer edge and holding multiple rings; the illustrations (Sprockhoff, 1956, tafel 25, no. 1; 1930, tafel 34) of this necklet do not agree in the ring arrangement so it is impossible to detail the original disposition. The ? Kr. Rügen necklet has similar triangular loops holding multiple rings arranged in 1 - 1 - 3 fashion. The only associated find is Ziemitz (1930, taf. 34) where the fibula and Blechhalskragen are of Period V and the bronze Grevenkrug vessel is Period VI in North Germany and Hallstatt C in Central Europe (von Merhart, 1952, taf. 15, no. 5). Sprockhoff places the Ziemitz hoard, and the Ziemitz-type necklets, in Period V only

with reservations, and suggests that transitional V - VI is preferable, but emphasizes that Period VI alone cannot be tenable. Returning to the necklets, the Tetzitz is truly penannular as stated, but the other two possess attachments of different form. The ? Rügen necklet has one hooked terminal and the other carries a free-riding ring to which is attached a double-looped bar; this hooks over the opposite terminal. The Ziemitz necklet has a hooked terminal as well, and a looped terminal to which is attached a rigid chain formed of four rings cast side to side with knobs at these junctions; the last ring hooks over the terminal of course. Two features appear on this necklet, and one on the ? Rügen necklet, that may be of interest. The knobbed loops of the Ziemitz necklet are seen in less acute form on the Middle Rhine and Alsace necklets (P.Z., xi, 174, abb 17, no. 1), suggesting some contact or influence from north to south, and the capstan-like projections on the ? Rügen and Ziemitz necklets, near the terminals, suggest Hallstattian influence as seen for example on the Cintra, Portugal, gorget (BM 1920, p. 158). This gorget is penannular, unlike the Evora and Penella gorgets, (Reinach 1925, 123-), and its terminals-attachment is somewhat similar to the ? Rügen necklet, with hook and eye or loop. The cups appearing on the Cintra gorget are generally considered to be Hallstatt in date (e.g. Déchelette, ii, fig. 363), and the geometric decoration may also be considered as of this period (e.g. Déchelette, iii, p. 838). However, the massiveness of this gold gorget suggests Bronze Age rather than the later period, and the connection with lunulae segmented decoration also suggests this. The three-bar arrangement is also close to Bronze Age necklets (e.g. Broholm, DO iv, fig. 79, from Eilby, of Period IV).

Taking all the factors into consideration, the date of the Ziemitz-type necklet or diadem seems to lie in the transitional period V - VI, sometime near or slightly after 700 B.C.

The Irish gold gorgets are presumably related to the Northern Halskragen, although the rarity of associated finds renders the problem difficult of resolution. About a dozen of these gorgets have been found, and most are composed of from three to seven hollow corrugations, the effect being similar to the bronze Halskragen. However, the terminal discs, elaborately decorated, are not matched in Northern Europe except in the style of concentric decoration and boss-work seen for example on sunflower pins. The arrangement of these decorative motives, especially on the Gorteenreagh and Gleninsheen gorgets, is somewhat similar to the less elaborate ornamentation on the Loch Broom swan's-neck sunflower pin. The only associated find, Gorteenreagh, links a gorget with two triangular-sectioned ornaments, ? hair rings, the largest yet found, two Type 3c ornaments with wide cupped terminals, and a dress-fastener of large size. The Late Bronze Age dating is thus established, and the suggested absolute date is in the seventh century or later.

A further series of necklets must be mentioned as showing some similarity to the Gight specimen. These occur in the early Hunsrück-Eifel culture of the Middle Rhine area, and a necklet from Heimbach (Grave Group 2057-65), another from Gladbach, Pützkaul, illustrate a form which is probably related to the Ziemitz group, and to the later devolved necklets or diadems from the Hunsruck-Eifel area. The Heimbach diadem is composed of a hollow bronze bar, cast on a clay core, with

ring-holders carrying four or five rings arranged 1 - 3/4. The similarities with Gight are not quite as close as those from the Ziemitz group, for instance, the ring-holders springing from the middle part of the diadem, so that the pendants overlap part of the hollow-bar, and in addition to this the chronological position of the group does not coincide with the other members of the Gight hoard (see Trierer Zeitschrift, xi, 1936, 41, xix, 1950, app. 8-9 for other neck-rings and related objects in this Rheinhessen area).

The Braes of Gight necklet, then, belongs to or is related to the Ziemitz group of Northern Europe, dated to late Period V or VI, with an initial date of c.700 B.C., in keeping with the proposed dating of Type 2 and 2a bracelets.

TRAPRAIN LAW and JARLSHOF

The settlement of Traprain Law, East Lothian, has recently been discussed by Burley (1956, metal-work) and Feachem (1956, fortifications) continuing work by Curle, Cree, Cruden and Bersu (Feachem 1956, 284 with refs.). The site today reveals little evidence of the minor excavations, and remains one of the most important evidences of the survival of a Late Bronze Age economy into the pre-Roman Iron Age of Scotland.

Curle and Cree were unable to distinguish their various 'levels' or 'floors' throughout their excavations, so that it is difficult to relate any of the structures exposed to the Late Bronze Age. The fairly consistent recording, however, of Late Bronze Age relics from the lowest level, although mixing did occur (Burley, 124), suggests that it was only in the mid-first millennium B.C. that the Law was substantially occupied. The only known structure that may have been of Late Bronze date is a hut (PSAS, lvi, 1921, 2 fig. 8), near which several socketed axes were found, and which consists of a small circular paved area encircled by rough stones, with two entrances and a hearth outside. In view of the abundance of Late Bronze Age objects (Burley T1 - T58) it is clear that some of the amorphous remains noted by the excavators as belonging to the 'lowest level' date from this period (e.g. PSAS lv 1920, 21 fig. 4; liv 1919, 20, fig. 6).

As Traprain remains the only settlement site showing a Late Bronze Age occupation of any extent on the Scottish mainland, both its character and its duration are of the utmost importance not only for

this research but for the whole question of the pre-Roman Iron Age. As already described, the physical character of the settlement on Traprain Law cannot be precisely determined because of the limited and/or non-scientific excavation, but the duration of the settlement, of equal importance, can be considered here in some detail.

Burley (op. cit. 124 -) has discussed the bronze objects from the site, but in view of the foregoing typological and distributional studies, some revision is needed. While most of the bronzes cannot be precisely dated to any particular phase of the Scottish Late Bronze Age (e.g. spear-tip, some socketed axes), other objects suggest an initial date extending back to c. 700.

Burley compares the Glentrool hoard with Traprain because of the similar chisel-punches and hybrid razor, but such a hybrid also occurs in the Hallstatt C Adabrock hoard. The shouldered and tanged chisels from Traprain also have a parallel at Adabrock. Ribbed socketed axes, and collared and faceted axes, are generally considered to be of seventh century or later date, and the Type 1 socketed gouge may also be of this horizon, with a practically limitless terminus a quo B.C. The bronze Type 1 bracelet and bronze triangular-sectioned ornament have analogies in the Balmashanner hoard, the latter objects in gold, dated from c.700 B.C., and bronze copies of this ornament occur in France with Late Urnfield beaten bronze cups (Favret 1928, 16 - 33).

The hollow ring with edge perforation has analogies in Ireland and Wales (Burley, T31) and presumably belongs to this same horizon, while the Class III razor hardly dates earlier than the late seventh century. The girdle-ring is another matter, and has been dated

by Burley to "the last centuries B.C." by comparable objects of the (pre-Roman) Iron Age in Jutland (also see Broholm DB IV, 123, fig. 62a). An exact parallel from Lough Gara, a site belonging to the Knocknalappa group, links Traprain with this Irish crannog. The occurrence of iron objects in the second Late Bronze Age level at Gara suggests that the site, and Traprain, may have an initial date not earlier than the fifth century.

Clay moulds have been found in abundance on Traprain, but the types represented are hardly diagnostic of a specific phase in the Late Bronze Age. The iron socketed axe, however, has been assigned by Burley to "the turn of 1st century B.C./A.D.", and Class I ring-headed pins may also be of late first century B.C. date. Further objects and analogies are listed by Burley, but the problem of continuity remains. The ring-headed pin is now connected to La Tene Ic brooches, at Bonchester and the Abernethy forts, and suggest that the earliest Iron Age occupation of Traprain dates little earlier than the first century B.C. (Burley 1956, 129; C.M. Piggott 1950, 129 - 132). The question resolves itself whether or not the Late Bronze Age inhabitants of Traprain remained until they came into contact with the newcomers, "the builders of timber-laced wall forts".

Childe asserted that there was no reason to suggest desertion, and the absence of any radical change in rampart construction supports this (Feachem 1956, 284 -). The evidence of the metal-work is not conclusive, as Burley admits, although she seems to favour a continuation of occupation possibly from the sixth century to the arrival of new influences in the first century B.C. We have seen that the

stratigraphy of the site is not yet clear enough to admit of any appreciable time-lag between the various 'levels' of Curle and Cree, and this leaves only the pottery, studied most recently by Hogg (1951, 214 - 219).

Because of the mixture of finds from varying horizons, it is extremely difficult to distinguish the truly pre-Roman ware from the later material. However the first report of the excavations (PSAS, xlix 1915, 155 ff), wherein three occupation levels were distinguished, prompted a description of the pottery recovered from each horizon. The lowest level yielded a thick gritty ware, bucket shaped with slightly narrower and thinner lip, which was generally rounded though sometimes bevelled or flat (fig. 12). The middle and upper levels yielded fewer sherds of native ware (fig. 13, 14). In subsequent reports the excavators failed to illustrate the native pottery from the lowest level except in rare instances (e.g. PSAS 1 fig. 16; PSAS lviii, fig. 13) so it is difficult to determine the stratigraphical position of the great bulk of ware that seems to be purely native. The only rim forms shown were in the original report, and it has been found extremely difficult to match the form with the actual sherd. The problem is of course whether or not the Traprain pottery has any connections with Covesea-ware, notwithstanding Iron Age or Roman influences from the South.

The definition of Covesea Ware requires much more than merely a flat-rim and rather coarse fabric, it requires evidence of a new technique in pottery fabrication that is difficult to describe. At Covesea and other sites some of the pots are merely undecorated bucket-urns of coarse texture, often with flat rims, and this seems to represent

a local degenerate rendering of a type descended from native Bronze Age ware, (Sprockhoff's Kümmerkeramik is regarded as a parallel and possibly connected devolution). But a few of the sherds from Covesea and other sites are harder-fired, with a considerable amount of small grit, and slurried surface, and appear from their texture to be wholly removed from the Bronze Age tradition. The problem of this pottery group is discussed in another section, but the conclusion drawn is that the evidence, based on scarcely sufficient finds, with however the valuable support of bronzes, warrants the postulation of a landing in north-east Scotland of immigrants from the Continent at a date not far removed from 700 B.C.

The pottery from Traprain does not appear to fall into this family. Upon examination of the mass of material, the general impressions are that the native ware falls into two broad groups, one with thick-walled pots poorly fired and with large grits, the Kümmerkeramik of many sites in the Bronze Age, and one with thin-walled pots hard fired but with very little grit, this last point suggesting a different technique from that of the true Covesea-ware. In this finer ware occurs most of the sophisticated forms, with everted rims and/or decoration (e.g. PSAS 1, 1916, fig. 16). The rim forms of pottery of both groups, from the lowest level again, as seen in the first report (PSAS, xlix, 1915, fig. 12) show considerable variation and some that are completely foreign to the Covesea family where rigid simplicity is the keynote.

Hogg (op. cit. 214 -) distinguishes two fabrics in the Traprain native pottery, one with large grits and coarse but slightly harder fired than Cinerary Urns, and a smaller group, well fired, and with a sandy texture "like that of the Romano-British and earlier

native pottery of southern England"; this ware comes mainly from the upper layers, and in view of the excavators' early statement probably does not belong to this discussion of the lower level pottery of undoubted Late Bronze Age date. Hogg agrees with Childe's suggestion (1935, 250) that "the mass of the townsmen was formed of makers of Cinerary Urns, blended with Hallstatt folk ... from Yorkshire", but feels that this Iron Age A element is very slight.

The absence from the Late Bronze Age of Scotland of any pottery, domestic or funerary, save that from half a dozen sites, and the general agreement that no immigration or invasion had interrupted the Bronze Age until at least c.700 B.C., and this only limited in extent, suggests that the native pottery tradition, both domestic and funerary, must have continued without interruption, and thus the appearance of the Middle Bronze Age Cinerary Urn tradition at Traprain, and other sites, is completely in accord with the evidence. Indeed the native ware from Traprain, presumably from the upper levels, has been described as of Bronze Age fabric and technique, Iron Age form, and of post-Roman date (Richmond 1942).

The Hallstatt nature of some of the Traprain pottery is seen in the shoulder and concave neck, usually debased it is true, but nevertheless present (e.g. Hogg 1951, fig. 55, 5, fig. 56, 20). Local renderings of imported Roman ware also occur in this general native group (ibid fig. 56, 14) and other forms (ibid fig. 55, 8, fig. 56, 18), with everted rims recall native 'Iron Age' ware from the West.

As the Traprain pottery shows no fabric or form that can be related back to Covesea ware of c.700 B.C., the ceramic evidence

cannot directly contribute to the problem of dating nor of the continuity of settlement on the Law. The finer pottery here could be dated back to the fourth or even fifth centuries because of their Iron Age A relation, but much of this occurs other than in the lowest level where the purely native coarse pottery is principally found along with most of the bronze objects. Of these bronze objects, none need be dated earlier than the fifth century. The absence of any pottery or bronzes of the Covesea horizon suggests that the settlement on Traprain commenced later than the incursion in north-east Scotland, and the occurrence of some late forms of pottery in the lowest level at Traprain also supports this suggestion. The Iron Age influence in the Knocknalappa pottery and the associated iron and bronze objects at Lough Gara, suggest that the Irish group dates little earlier than the fifth century, and the analogous girdle-rings at Gara and Traprain support the evidence of an initial date for the Late Bronze Age settlement at Traprain of the fifth century.

The only other major settlement of the Scottish Late Bronze Age is Jarlshof, in the Shetlands, recently discussed by Hamilton (1956). Six dwellings dated to the Late Bronze Age have been excavated, but presumably only two or three were occupied simultaneously in view of the evident rebuilding. House I, II, III and IVA were oval with a central hearth and side chambers, built of dry stone with a small courtyard outside (ibid fig. 10). The entire settlement was enclosed by a small stone wall of low height. Hamilton suggests that this courtyard type of house was descended from the megalith builders in this area.

At a later date, a new type of dwelling was introduced, consisting of large circular huts, of stone, with partitions, a crude

wheel-like arrangement with a central hearth. Outside these stone huts the newcomers dug and built souterrains probably for food storage. After a short time the site was abandoned and drifting sand obscured the huts; the rate of deposition is unfortunately not ascertainable, but a considerable deposit accummulated before the broch-builders arrived, probably in the first century A.D.

Details of the individual dwellings of the Late Bronze Age are listed by Hamilton (op. cit. 18 - 36), with individual finds as well, and only those of special interest and importance will be considered. The earlier groups, Dwellings I - IVA, are linked by their common slate knives and saws, and quartz scrapers. Bone socketed chisels occurred in Dwellings III and IVA, and clay moulds as well. The pottery from the group conforms to the stratigraphical sequence I - IV, without much variation; square-sided steatite vessels and those of steatitic clay were found in the earlier dwellings (steatite occurs at Cunningsburgh, 15 miles to the north). The final phase of Dwelling III saw the establishment of a bronze smith who used clay moulds for casting swords, socketed axes and gouges, and sunflower pins. (Clay moulds were found stratigraphically in an earlier phase of this dwelling, as well as in Dwelling IVA). A trough quern is presumed to have been employed in the preparation of the clay. The copper may have been obtained from near Sandwick, but tin would have to be imported.

This earlier group of dwellings was apparently occupied by a people who used heavy stone tools extensively, possibly for digging, quarrying, flensing. Slate is the commonest stone and was presumably acquired from a deposit at Grutness, near Jarlshof. The implements

represented include bifacially-worked axes or choppers, and large flat cleaver-like tools (fig. 12, no. 1 - 4). Smaller quartz and slate objects were employed as saws and knives; bone knives, awls and chisels also occur as well as heavier scoops or shovels. Aside from the numerous clay moulds, a tanged knife of bronze (fig. 14, no. 6) was found which was considered by Childe to be an Irish or British type (1935, 184). However, while many tanged double-edged knives occur in hoards from the British Isles (e.g. Inv. Arch. GB 16 - GB 18; Burley 1956, T9, ? T8) none are of exactly this Jarlshof form which presumably is a local rendering.

In view of the presence of a mould for sunflower pins, probably not of swan's-neck type, the Irish - Scandinavian connection with Jarlshof becomes apparent, and indeed the general belief is that the bronze-smith operated under Irish technical and typological knowledge. The tanged knife or blade from Nordhouse, Shetland (NMA D06) is clearly a Scandinavian type (e.g. Montelius 1922, fig. 1088, repeating form of tanged swords as at Dalduff, Ayrshire also of Period IV) although a version, probably unrelated, occurs in England (e.g. Reach Fen, Cambs, Inv. Arch. GB 17, 3; Elgee 1930, pl. XXIII, 49).

The pottery from these dwellings of Village I was generally hard-fired, with little coarse grit, although the ware must be described as rough. Steatite backing was sometimes used. The pots are bucket-shaped with a good proportion showing slightly incurved mouths. The rims are flat or rounded, occasionally rolled, and one or two thin mouldings were sometimes added below the rim (Hamilton op. cit., fig. 15). Square vessels occur, and a few sherds have scratched ornament. Hamilton relates

this Village I ware to Old Keig and Loanhead of Daviot "where, however, only the plain barrel-shaped cooking pot with flattened rim is present". And from this the connections with Heathery Burn, Covesea, Ballinderry and south-west Scotland are presumed. But while Jarlshof exhibits pottery clearly of local native tradition, with possibly some external influence as seen in the cordoned decoration and rolled rims, none of the Jarlshof ware belongs to the true Covesea group; the suggested dating of this settlement at Jarlshof lies in the years c.400 - 200 B.C., possibly extending back to 500, and this is clearly too late to allow any direct vital connection with the Covesea incursion c.700 B.C.

The similarities between the heavy industrial equipment plus the coarse pottery of the wheel-house at the Calf of Eday and the material from this courtyard phase at Jarlshof suggest that some connection existed between Orkney and Shetland, and certainly the dwelling types point to some relationship strengthened by the occurrence of steatite at Eday, presumably imported from Shetland (Hamilton op. cit. 31; Childe 1946, 55, fig. 11). This surely points to the fact that Jarlshof must be totally unrelated to the Covesea group, and that settlement here did not occur until well after the initial Covesea incursion.

The suggested routes linking Covesea and its sites with Ireland via Galloway, and then the Shetlands and Orkneys via the Hebrides, do not appear to be anything but hypothetical, and cannot be proved by the pottery evidence, which indeed denies its validity.

The second Late Bronze Age group to settle at Jarlshof brought new techniques in buildings and pottery, and only arrived after the preceding structures had been partially covered over by sand. The duration of this non-occupation cannot be determined, but the discovery

of a clay mould for a native sword in one of the new dwellings suggests that the interval was not long. This is the only fragment of clay mould recovered from the new settlement, and presents the possibility that it may have arrived in its stratigraphical position by some accident, possibly during the clearing of the area by the round-house builders.

The new dwellings were round-houses with central hearths and radial wheel-like partitions. The second such house to be built (IVc) yielded a piece of iron slag. The differences in the material culture of Village II from that of the earlier Village I is apparant not only in the house types but in the associated implements. Few large stone tools seem to have been used by Village II, although pounders were in some demand, and trough querns continued to be employed. Steatite armlets appear in Village II as well as steatite beads (op. cit. fig. 17). Bone awls were again in use, and several bronze objects of uncertain use (a fragmentary bronze plate with rivet hole at each end is presumably a pendant of sorts and recalls the Glentrool specimen of much earlier date).

In the pottery, a complete change from the earlier types shows that the period of non-occupation must be of some significance and must separate two distinct groups of settlers. Two types of pottery occur in this Village II, one a black polished ware with rounded shoulder and concave neck, the other a bucket-urn with wide internally flanged rim. Neither of these types has anything of significance in common with Covesea-ware. The later occupation in Village II is claimed to show some decadence in pottery form (cf fig. 18, 19), but the important fact is this ware's resemblance to Iron Age A forms from Scarborough and All Cannings Cross dated to the fifth century. Hamilton admits that this

Iron Age influence at Jarlshof "renders dating a difficult process", but suggests that Village II need not date earlier than the last centuries B.C. possibly c.200 B.C. - 50 A.D. In view of the distinctly different nature of Village II from Village I, and the Iron Age influences visible in the pottery, this second main occupation at Jarlshof should be termed Iron Age rather than Late Bronze Age.

The researches of many antiquarians have already thrown much darkness on the subject, and it is probable, if they continue, that we shall soon know nothing at all.

Mark Twain

FLAT-RIM POTTERY (COVESEA WARE)

The first expression of the Flat-Rim theory, that the pottery found in north-east Scotland represents something more than a purely native development, was made by Miss Benton in 1931, in the report of the excavation of the Sculptor's Cave in Morayshire. In this report, the occurrence of exotic bronzes and pottery with flattened rims was taken to illustrate the arrival of a group of people not otherwise represented in Britain.

This idea has been examined and accepted by many archaeologists since that day, with ever-increasing elaborations, so that today the Flat-Rim family is believed to extend from Ireland to the east coast of England, and from the Humber to Lewis (Hencken 1942). Following Benton, the next discussion of the Flat-Rim family as a Highland group was made by Childe (1935); the comparison of the ware from the Sculptor's Cave with that from Old Keig and Loanhead of Daviot was thought to reveal a positive dating for Recumbent Stone Circles, but later work by Childe (1939) illustrated the fallacy of this reasoning, although the manner in which the error had occurred was never satisfactorily explained.

Pottery from Jarlshof was also linked to the Flat-Rim family but Childe did not accept unreservedly the postulation of an invasion that had not reached England. The publication of the excavation of Knocknalappa and Ballinderry 2 crannogs in 1942 threw the field of Flat-Rim pottery open to all and sundry (Raftery 1942a; Hencken 1942).

The Knocknalappa ware was compared with Iron Age A pottery from English sites such as Park Brow, Scarborough, and All

Cannings Cross, based not so much on the fabric of the pots, which is totally different, as on the shape of the vessels, with shoulder and neck. The Knocknalappa crannog was therefore thought to date to the fifth or fourth centuries B.C., and recent work on the bronzes and gold objects of the Irish Late Bronze Age suggests that this dating may well have been reasonably correct.

The ware from Ballinderry 2 was considered in the light of information from English sites to represent a westward movement of an invading culture that had arrived first on the east coast of Britain, with a concentration along the Yorkshire stretch; the Scarborough people were thought to show a somewhat later landing in the same area. Ballinderry then illustrated an expansion to the west of the people represented in the east by Old Keig, Covesea, and Traprain Law, as well as the numerous north English sites.

Traprain Law entered the field by its similarities to the ware from Ballinderry, while also showing some influence from Iron Age A pottery from sites such as Scarborough. The chronological difficulties of this position have never been satisfactorily explained. Ballinderry ware also showed some resemblance to the pottery from Heathery Burn, and the urns from Largs and Knockahollet were included in this category. It is difficult to understand how the comparison with the pottery from Cush and Lough Gur failed to demonstrate the extremely perilous position these typological arguments were based upon, but the snowball effect continued unchecked.

The rediscovery of the pottery from Kildalton, Islay, resulted in an attempt to define the Flat-Rim family on the basis of fabric as well as shape, and showed that slight variations in rim form did not necessarily mean anything of essential import (Stevenson 1944). The suggestion was made that the ware from Islay and Covesea represented just one of the traditions that produced the pottery seen at sites such as Traprain and Old Keig, where Iron Age fabric and rim forms fused with the native Cinerary Urns. The Flat-Rim family was therefore connected with bucket-urns of non-cinerary type, such as those from Knockaholllet, Cush and Ronaldsway; the theory advanced was that the westerly distribution of the pottery under comparison showed a movement of people from west to east, the reverse of Hencken's idea.

Childe attempted to resolve the argument in his summary of Flat-Rim pottery (1949); he believed that the pottery of this type in northern Britain and Ireland was of a different texture from that of Cinerary Urns, and again was unconnected with crannog ware; yet Knocknalappa seemed to be related in some manner, and Iron Age A pottery also appeared to show some relationship. Unfortunately the exact connections were never elaborated, and the link with degenerate Cinerary Urns continued to be pressed, as Largs seemed to be related by virtue of the urns with flat-rims found there.

Cush and the Yorkshire vessels were also deemed to have some connection with the family, and the suggestion that all this represented a Late Bronze Age invasion, already influenced by

some Hallstatt culture on the continent and parallel to the Iron Age A invasion farther south, was advanced in some detail. However it was difficult to establish the exact nature of this incursion, although Hencken's theory of an easterly movement seemed to be preferred.

The Culmore find added to the list of relatives, if not members, of the Flat-Rim family (Evans 1945 39-), and the suggestion made was that this site and others such as Largs and Barney's Brae were early phases in the evolution of the Flat-Rim family, with Ballintoy and Portbradden representing later developments. Knocknalappa and Ballinderry 2 were linked by the Culmore and Knockahollet pottery, and other ware such as that seen at Lyles Hill (surface finds), and Kilfeaghan, were also related in some manner to the main body of the family, which by this date had grown well out of control.

The pottery from the lower levels at Traprain Law was reassessed by Hogg (1951), who related it to the native Cinerary Urn tradition with slight influence from Hallstatt or Iron Age A ware of the south; comparisons with pottery from a wide range of sites, both geographical and chronological, suggested that the family of Flat-Rim pottery was probably only the continued development of native Late Bronze Age people in areas outside the main invaded regions. This of course conflicted with the evidence of ware of this type from the Yorkshire coasts.

Discussing the Votadinian ware from Ingram Hill, Richmond suggested that the members of the Flat-Rim family such as

Covesea and Old Keig represented a break in form from the older Bronze Age tradition, thereby accepting the idea of some sort of influence if not invasion, and that this new pottery type continued into the centuries A.D. without much change in form (1942, 121). The sherds from Ingram Hill of Iron Age type were believed to be related to the pre-Roman native ware, and Richmond linked them to the older Covesea, Old Keig and Jarlshof Ultimate Bronze Age.

Recently the pottery from Jarlshof has come under review, and is discussed in detail below, but again the relations with Ballinderry 2 and Heathery Burn are stressed, with however the addition of the ware from the Calf of Eday (Hamilton 1956). The suggestion is made that the evidence points to the arrival of the earlier Bronze Age village settlers from the west, the original Flat-Rim people having crossed from the east coast of England and Scotland to the west and Ireland, thence back to Jarlshof via the Western Isles. Hamilton's Village ii, of round houses with souterrains, has yielded pottery showing some influence from Iron Age sites such as All Cannings Cross and Scarborough, but in view of the associated objects as well as the pottery, it seems more appropriate to consider this settlement as truly Iron Age.

The latest work on Flat-Rim pottery is the discussion of the Mullaghmore barrow affinities (Proudfoot 1956). The large bucket-urns of coarse fabric have been connected with pottery from sites as far apart chronologically as Lough Gur and Brochs or vitrified forts, and the comparisons cited show that the bucket-urn form can have a long life, thus demonstrating the necessity for

comparisons based on more than the plain bucket or barrel shape. The 'late bucket-urns' are divided in this Mullaghmore article into those with a finer and sandier fabric, of the 'Early Iron Age', and those with a coarser fabric, of the Cinerary Urn tradition, and Proudfoot states that the two kinds are often found together. This is the point that Stevenson made in his work on the Kildalton pottery.

The sandier nature of pottery does not seem to have any particular significance except when it can be shown to be a constant feature in the production of the ware, and the Covesea family does not appear to possess this distinctive feature in such a degree as to render it of any value in the determination of the members of the group. The Mullaghmore pottery is directly compared with the urn from Duff House and the coarser Covesea ware, and with Votadinian pottery, the suggestion being that the Votadinian ware represents the latest examples of coarse bucket-urns, the other wares being the earliest examples of the type. This may be of value in the establishment of the continuity of the form of the Flat-Rim pot, but it fails to distinguish the more important characteristics of the true Covesea or Flat-Rim ware.

The coarse pottery from any of these sites can be matched in ware from any period, Neolithic to post-Roman, and can represent either the persistence of the native Cinerary Urn tradition in a later time, or merely the purely local effort to produce a pot of simple utulitarian form, with the local materials and workmanship determining the final result; these coarse vessels can

therefore be of little value in the determination of a distinct group of ceramics representing a separate tradition. The pottery from Lough Gur is surely sufficient evidence to demonstrate that the basic form of the coarser Flat-Rim ware is a tradition of long-standing, and that no chronological position can be established from form alone (O'Riordain 1954). Pottery from probable Neolithic sites at Whitepark Bay, Dundrum and the Kilgreany Caves all show this point (NMIreland 1898.124,1957.259;1933.4633-4763; see also Lauder 1830 app VII,418- flat-rim pot in ?primary position at Clava cairn; and Garrol Wood, similar sherds from the 'central area of the circle'NMA EP25).

In north-west Germany, the coarse Kümmerkeramik is believed to represent a Neolithic tradition maintained into the Bronze Age by the surviving inhabitants (Sprockhoff 1941; see also Montelius 1922, 1326 and 1441, sun-pin and flat-rim pot in barrow at Ljunga, Sweden). Whether or not this continental ware can be connected with the British or Irish bucket-urns is difficult to determine; Sprockhoff does not admit of a direct connection. However, the bucket-urn in Britain and in Ireland certainly seems to represent something foreign to the native Bronze Age cord-ornamented ware, as most authorities have stated. The true Covesea ware, discussed below, must however be considered as showing a close relationship with pottery from the continent, in the Kümmerkeramik tradition, as shown both by its distinction from native ware in Scotland and by its associated exotic bronzes.

The problem then of the Scottish Flat-Rim pottery group is

three-fold. Can a type of ware be distinguished from the normal and ordinary native tradition of long-standing bucket-urns? Can this hypothetical pottery group be located in a particular area of primary settlement, notwithstanding its later influences? Can the ware be assigned a chronological position in Scottish pre-history?

The questions have been discussed recently in connection with the problem of Pictish settlement in north-east Scotland and may here be briefly noted (Piggott in Wainwright et al 1955 56-). The centuries bordering on 600 B.C. show evidence of trading contacts between Scotland and the north-west European plain as detailed elsewhere in this study, while the first wholesale immigration into Britain appears to have taken place in the fifth century, along the eastern coasts of England as well as farther south. The claim as presented above that the exotic bronzes and pottery found in north-east Scotland represent a landing well in advance of the incursion in the fifth century is thus of considerable importance for connections between Britain and the continent in the Bronze Age.

The previous arguments and comparisons of Flat-Rim pottery have all attempted to link various areas in the British Isles , without however showing beyond doubt that the pottery tradition in the Highland Zone does actually show a foreign element that can be reliably placed both chronologically and geographically. The joining of sites of varying ages and locations has resulted in the growing opinion that the great Flat-Rim family represents

nothing more than the native tradition of degenerate Cinerary Urns, or Food Vessels, existing in the Late Bronze Age in a form recalling the basic type of urn seen in Neolithic times. That there is a considerable amount of truth in this will be revealed below, and the suggestion may be made that possibly the devolved nature of much of this Late Bronze Age or pre-Roman Iron Age ware is due to the great increase in bronze tools for the fabrication of varying shapes of wooden vessels, with consequent decline in the pride of fine pottery-making.

However, within this family of pottery as found throughout the Highland Zone, the recognition of a finer ware has been made, and it has been suggested that this finer pottery represents the arrival of a new tradition, of new people, rather than traders with only exotic bronze ornaments. The recognition of this better class of ware at the various sites depends naturally on personal inspection of the sherds in question, and the following discussion of selected sites is based on the examination of all pottery that has been claimed to show some connection with the Flat-Rim family.

The evidence suggests that a Flat-Rim family does exist, that a finer ware can be distinguished from the much commoner coarse bucket-urns of purely native tradition, but that this finer ware is limited to a distinct position in the Highland Zone and to a specific phase in the Late Bronze Age. This pottery will be termed Covesea Ware, as the previous nomenclature, Flat-rim, is considered to be both confusing in view of previous work and not applicable to the ware in question.

In addition to this identification, a separate group formerly considered as of the Flat-Rim family may be distinguished in Ireland, and will be called the Knocknalappa group, based upon the pottery from Knocknalappa crannog (Raftery 1942a). Knocknalappa crannog appears to have had only one Late Bronze Age occupation, and Raftery has expressed doubts whether or not the level yielding Late Bronze Age material actually does represent a habitation. However, this is of little import in the present connection, as the crannog shows a Late Bronze Age phase, both in pottery and other finds.

The most distinctive objects from the crannog are a sunflower pin and a short Late Ewart sword; the latter was found on the foreshore as well as a socketed gouge, but all seem to be objects that can be linked with the actual crannog finds. In any case, the sun pin points to a period well in the Late Bronze Age of Ireland, and the amber from the site also suggests a time when connections with Scandinavia were strong. The sun pin appears to be a degenerate variety, and is matched in several other Irish hoards, including Booleybrien. The lignite bracelet has been stressed as showing contact with All Cannings Cross, and the perforated and U-sectioned bone objects also seem to point in this direction. Raftery suggested a date of 500-300 B.C. in his report, but has changed this, in view of later work, to within a generation or two of 600 B.C.

The crannog Ballinderry 2 seems to be not far distant in date from Knocknalappa in their common finds of bronzes(Hencken 1942).

A sunflower pin and amber are duplicated at Knocknalappa, and the other objects, including Thorndon knife and shale armlets, are consistent.

The third crannog of this group is Lough Gara, sites 61 and 74 in particular. The finds and stratigraphy from these two sites show contemporary occupation, and the pottery and other objects will here be considered as an entity. Sunflower pins, disc pin, and false ring-money point to contemporaneity with Knocknalappa and Ballinderry 2, and the flat lozenge-shaped and perforated wooden objects at both Lough Gara and Ballinderry confirm their attribution to the same phase of the Irish Late Bronze Age. The bronze ring with looped attachment has its only parallel in the early level at Traprain Law, considered below. The only other crannog that shows affinities with this group is Rathjordan, which has revealed a base of boulders identical to that seen at Ballinderry 2 and Lough Gara.

Lough Gara yielded two Late Bronze Age occupation levels, but there appears to have been only a short interval between these, and the finds do not show much difference as far as bronzes and gold are concerned, with ring-money and dress-fastener in different levels. However the important finds in the upper level include iron objects, apparently contemporary with the bronze tools and the pottery. Raftery dates Lough Gara and the other two crannog sites to the decades around 600 B.C., revising his original opinion for Knocknalappa of 500-300 B.C.

The pottery from Knocknalappa consists of slightly shouldered

and necked urns with plain rounded or somewhat flattened rims. The fabric is composed of a rather fine base with much small grit which occasions the rather chalky feel to the sherds. The surface is fairly hard with little or no evidence of a finer surface having been applied; this surface is not at all like the slurried surface seen on sherds of the true Covesea pottery. The Knocknalappa ware is uniformly dark, from a true black to a dark grey.

The ware from Ballinderry 2 differs on the whole from this Knocknalappa pottery, but several sherds exhibit extremely close resemblances and support the evidence of the bronzes that the two sites are contemporary to a certain degree. (Ballinderry sherd E6.136 is of the Knocknalappa necked type). The general form of the Ballinderry ware is of a bucket-urn, some with internal bevel of varying degrees of steepness, a few with plain rounded or flattened rims. The fabric is on the whole of a coarser nature than that from Knocknalappa, with many sherds exhibiting a considerable amount of large grits and poor firing; however there are several fragments that show smaller grits and better firing, and which are thinner-walled. The colour varies from buff through grey to dark grey or black. In general, the ware may be considered as a part of the Knocknalappa group, supported by the few sherds of Knocknalappa type and the bronzes as well as the crannog construction.

Crannog 74 at Lough Gara yielded most of the pottery from the sites here, but some similar ware occurred at crannog 61, this

latter site providing most of the bronze and gold objects noted above; there appears to be no reason for treating these crannogs as of different ages. The pottery is generally thick and coarse, with much grit, and the surface is commonly slurried. The ware is mostly dark, but some buff and light grey sherds exist. The rims are generally internally-bevelled, and resemble Ballinderry in this respect, but one or two sherds seem to recall the necked urns of Knocknalappa type. The pots from Lough Gara are bucket-shaped, about 12" in mouth diameter, with a height not far from this figure. The firing of this rather coarse ware is on the whole poor, but a certain proportion have been better prepared and fired, with thinner walls and finer grit, resembling the Knocknalappa type. While the majority of the pottery from both Lough Gara and Ballinderry 2 is of poor quality, at both sites there occur finer wares that appear to be related by either form or fabric to the ware from Knocknalappa.

These three crannogs can be rightly considered as a group because of the occurrence at Ballinderry of sherds showing similarities to both the other sites (Ballinderry E6.136, not recognized by Hencken, as at Knocknalappa; Ballinderry E6.194 as at Lough Gara E21.1838). In addition, the distinctive flat wooden objects at Lough Gara and Ballinderry 2 link the two sites, as do the bronzes at all three crannogs.

The pottery from Knocknalappa has been considered as showing Hallstatt influence in its form, and comparable shapes are commonly seen in Iron Age A contexts at All Cannings Cross, Scarborough

and Park Brow. This influence appears to be of some importance although it should be noted that somewhat similar forms occur in earlier contexts (e.g. Lyles Hill pottery; and later ones as well, Archaeologia lx 263 fig 9). The necked type of ware also occurs in the later levels at Jarlshof, but the fabric is different. Important associations supporting this Iron Age influence theory include the lignite bracelet and perforated U-sectioned bone objects at Knocknalappa, paralleled at All Cannings Cross, and the iron objects found in the upper level at Lough Gara with normal Late Bronze Age relics. These iron objects may be considered as equivalents to the iron relics found at Traprain Law, including an iron socketed axe.

If then the three Irish crannogs can be assigned to a period when they had come under influence from a Hallstatt culture, possibly of Iron Age A type from England, then the dating of these sites must fall in the centuries after the arrival of the Iron Age in Britain, in the years after 500 B.C. But the current dating assigned to these three sites places their occupation in the generations bordering on 600 B.C., and this is too early for British Iron Age influence to be invoked. It is suggested that the present dating of the crannogs to 600 is unproven by the associated objects, and the severance of the connection with true Covesea ware will be seen to lend an element of support to this theory, which however depends to a great extent upon the reported association and contemporaneity of the iron and bronze objects at Lough Gara.

In addition to the pottery from the three crannog sites, several other Irish finds appear to belong to the Knocknalappa group. An urn from Culmore, Co.Antrim, is slightly shouldered and necked, and contains much large grit (Evans UJA viii 1945 39). It has previously been compared with the Knocknalappa ware, although the analogies with Largs, etc., are certainly not valid. Another sherd, from Tullyhullion, seems to fall easily into this Irish group; in form and fabric it resembles the Knocknalappa ware, and was found with a socketed axe (NMIreland 1941:353,354).

Two urns from Knockahollet, Co.Antrim, have been compared with Ballinderry ware, and may belong to this Irish group. An urn with a slightly everted rim from this site recalls some of the Traprain Law pottery (JRSAI lxiv 1934 264). Another urn, with provenance unknown, has the Knocknalappa necked profile, but is rather more like Cinerary Urns in fabric, both thick and coarse (Belfast Mus 101-1908). Ballintoy has been noted as showing affinities to the Flat-Rim family, but the fabric and the profile are unrelated to both Knocknalappa and Covesea, as is the pottery from Mullaghmore.

Beaten bronze buckets and cauldrons have recently been dated to the seventh century B.C. and no later, and the suggestion has been made that possibly the carinated shouldered outline seen on some pottery of the Late Bronze Age reflects the bronze bucket form (Hawkes 1957 160). Bronze cauldrons were imitated in wood (Belfast Mus, Hodges 1958 fig 6) and it is possible that pottery also duplicated the bronze forms of the seventh century. But the

carination seen on the Heathery Burn ware is not matched on the pottery from the Knocknalappa group, and shoulders are not seen at all in the Covesea group. As stated, the dating of the Irish pottery group is uncertain, but in view of the original dating (Raftery 1942a) and the Lough Gara iron connections, a date nearer the fifth century is suggested, and therefore Hallstatt pottery may be invoked as the influence for the ware rather than bronze buckets, which are hardly close in form. In any event, the Irish group shows no connection with the Scottish or Covesea group in form or fabric, and this is the most important conclusion as regards the significance of Late Bronze Age pottery in Scotland.

The Covesea group is composed of those Scottish sites that have yielded ware of comparable form and fabric to the pottery found with the distinctive Late Urnfield bronzes at the Sculptor's Cave, Covesea, Morayshire. It will be noted that all the ware of both this group and the Knocknalappa group is non-cinerary, and this serves to point to the elimination of the pottery from the cremation cemetery at Largs, Ayrshire. This Largs ware is clearly a part of the Cinerary-Urn tradition, and its frequent mention in connection with Covesea has caused much confusion. None of the pots exhibit any resemblance to the true non-traditional Covesea type, except in the internal bevelling of the rim, and this feature is well known from Neolithic sites, such as Lough Gur, and from Cinerary-Urns as well.

All the Scottish pottery that has been included in any lists of Flat-Rim pottery has been examined, but it is not intended to

discuss any sites other than thosa that have certainly or probably yielded true Covesea ware, the latter classification necessary because of the small and fragmentary amounts obtained from some sites.

The type site, Covesea, showed two occupation levels, one of the Late Bronze Age, the other of later 'Romano-Caledonian' nature, and some confusion has always been present as to the stratigraphical position of much of the pottery recovered and now in the National Museum. However this has to a certain extent been resolved, and the ware described can without much doubt be ascribed to the Late Bronze Age occupation. The pottery is notably of non-cinerary urn tradition in its thinness of wall, the use of much grit of a very fine nature, and slurried surface, which yields a fabric somewhat slippery and yet sandy as well. It is of course difficult to describe pottery of this type, and it is mainly by the feel that the type can be distinguished from the ordinary native ware which differs as well in its thick wall and large grits.

The criterion of degrees of firing temperature does not appear to be of much importance as some authorities have contended, as the true Covesea ware varies in colour from buff through pale orange-red to grey and darker shades. The firing has always been well-executed, and the sherds exhibit a hardness that is not matched in the normal Late Bronze Age pottery that must have had its origin in the earlier Cinerary and cooking-pot tradition. The rim forms have commonly been considered to show only the

flatness that has hitherto been the reason for the term Flat-Rim pottery, but considerable variation exists. The sherds from the type site are in the main internally bevelled, with a smaller number showing a plain rounded rim; very few if any exhibit the horizontal flat-rim seen to a certain extent at other sites of the group.

The bases are equally divided between those with splayed foot, or heeled, and those with plain rounded angle at the foot.

The pottery from Loanhead of Daviot, Aberdeenshire, cannot unfortunately be considered as of primary nature in connection with the stone circle at the site, nor can it be definitely connected with the Cinerary-Urn cemetery or the bloomery adjoining, (PSAS lxix-lxxi 1934-37). The ware has often been described as not of Cinerary-Urn type, but closer to the 'Early Iron Age'. In general, the fabric is sandier than that from Covesea or Old Keig, but how much this is due to the local materials and how much to the tradition of pottery making is difficult to establish; probably the former should take precedence. The width of wall is like that of Covesea ware, and unlike that of the near-by Cinerary Urns, and the use of a fine grit in the Covesea manner also shows some relationship. The surfaces of the pots were slurried over, and some few show evidence of a coarse slip. In colour the ware is generally buff to red, but some darker shades also occur. The firing is hard, and unlike that seen in the purely native ware, although some poorer pots as at Covesea belong to the same horizon. The possible association of ware of this type with

a clay sword-mould should be noted, although the precise nature of the relationship is impossible to deduce.

From Old Keig, Aberdeenshire, sherds were recovered in such positions as to suggest to the excavators that they were contemporary with the construction of the stone circle, but later discussions have rendered this unlikely, and the opinion now seems to be that the Old Keig ware represents the latest pottery at the site, later than the neighbouring Cinerary-Urns, which themselves are considered later in date than the circle. The original excavation report which linked the ware, of Covesea type, with the circle, has never been satisfactorily explained away (PSAS lxvii-lxviii 1932-34).

The pottery from Old Keig includes many sherds that appear to have been part of several bucket-shaped urns with horizontal flat rims, but internally-bevelled rims also occur, as well as plain rounded rims; it is considered likely that these forms may well have occurred on the same pot. The sherds again fall into two main categories, those that are thick and poorly fired, with much large grit, and those that have better firing, thinner walls and much fine grit. The ware is less sandy in texture than that from Loanhead, but is not far removed from the pottery at Covesea, and little evidence of slipped surfaces remain; the pots may however have been slurried-over, but generally not as prominently as at the type site. On the whole, the pottery from Old Keig shows firing as hard as, possibly harder than, the ware from both Loanhead and Covesea, and a few sherds seem to be thinner walled than any seen at these other sites. However, the overall impression is that the

ware from Old Keig belongs to the Covesea group, and it is unfortunate that its relationship to the stone circle is so indefinite.

The pottery from Kildalton, Islay, has often been included in lists of ware of the Flat-Rim family, but with the breakdown of this Highland group, a re-examination of this cave site and its relics shows that at best, the ware represented is an atypical version of the true Covesea group, and in this paper it is not considered to exhibit enough similarities to be included in the group. The pottery is hard-fired, and in this is unlike that of the Cinerary tradition; however, the absence of numerous small grits in the body of the ware, and the slipped surface, tend to demonstrate the essential divergencies of the pottery from the true Covesea family. The lack of specific Late Bronze Age associations renders this Kildalton material suspect, and it should be noted that the original report on the ware did not assign it to the Covesea group without question. The rim forms include internally-bevelled shapes, as well as plain rounded forms, and the occurrence of everted rims suggests either that a mixture of Covesea and other ware has occurred, or that the pottery, if Late Bronze Age at all, is atypical and basically unconnected with the Covesea group.

Some of the sherds are coarsely made and poorly fired, with much large grit, but others as noted show a finer technique, generally however lacking much fine grit; the plainer rims tend to belong to pots with a sandier texture, and the occurrence of

slurried surfaces should also be noted. The overall impression is that the ware from Kildalton is composed of several different types, a mixture, and that some sherds may illustrate some slight connection with the Covesea group, but only in a slackened version. The shouldered and necked sherd points to an influence of a Hallstattian character, but this cannot be proven by a single object. Its similarity to a sherd from Traprain Law suggests some connection between the two sites. In addition, the fabric of the shouldered sherd from Kildalton is more or less similar to that of the ware from Jarlshof, the Iron Age settlement, and this points to a date well out of the range of the Covesea group (Kildalton HM330, Traprain 1924.341.T3). This suggestion is considered the most likely, and is enhanced by the occurrence at the three sites of fragments of clay moulds, although one of these also occurred at Loanhead of Daviot, not necessarily in association with the Covesea-type sherds.

The decorated pot from Kildalton probably may be explained to native Cinerary-Urn influence, and supports the contention that the Islay ware does not represent the initial Covesea arrival, which is securely assigned to the north-east of Scotland and to the early seventh century, as well as suggesting that the Kildalton assemblage of pottery is a mixture of several elements; this possibility was advanced in the original report.

A more or less similar ware was found at Rathlin, Co.Antrim, and may be connected with this western Scottish form, but again the lack of dating evidence prevents any definite conclusions

(NMIreland 1937.2218-2366). The occurrence of a somewhat similar form of pottery from Irish crannogs, e.g., Glasmullagh, should be noted. Another view to be considered implies that the Kildalton ware and the Covesea site ware are Cinerary Urn-like in tradition, and that Old Keig and Loanhead represent a fusion of this tradition with an Early Iron Age form and fabric resulting in a bucket-urn with harder and better prepared fabric. Traprain Law then might be considered as a parallel or similar development, showing this fusion of native and Iron Age techniques, but more apparent because of the occurrence of shouldered urns. But we have seen that the Kildalton decorated pot and the shouldered sherd also illustrate this fusion, if not mixture, and to fit the above sequence we must invoke three traditions, the native Cinerary-Urn fabric, an ?invading bucket-urn shape, and an Early Iron Age shouldered form; the decorated pot then represents contact between the first and the last named, and this appears to render invalid the supposition that Kildalton pottery is only one primary phase of the later ware at Old Keig, etc. The comparisons with non-Cinerary bucket-urns, at Glenluce, Knockahollet, Cush and Ronaldsway are not at all close, and surely several at least of these represent nothing more than devolved Cinerary-Urns.

From the Balmashanner hoard, a few sherds remain of the large pot in which the bronzes were found, and it seems a possibility that the ware may belong to the Covesea group; however it is equally possible that the pot, of definite Late Bronze Age date, represents only a crude production of no special significance.

Nevertheless, the Balmashanner sherds do exhibit a slurried surface, and are fairly hard-fired. Their association with bronze objects of the Covesea group shows that some relationship is probable. The pottery found with bifid razors at Bowerhouses, East Lothian, may also have been of this type, but no trace of it remains.

The pot from Duff House, Banff, is generally accepted as a member of the Covesea group, as it exhibits all the necessary features, including internally-bevelled rim, slurried surface and degree of firing. The use of a considerable amount of coarse grit is not wholly in keeping with the Covesea tradition, but the general nature of the pot supports its inclusion.

Also to be considered is the ware from various hut-circles in Perthshire. The sherds from the site at Dalnaglar are fairly thick, and contain much coarse grit, but have slurried surfaces and the rim forms too are in keeping with the Covesea tradition. The few fragments of pottery from the neighbouring hut-circles at Dalrulzion are of similar type, and other sherds may also be considered in this regard, such as those from Barbush, Dunblane (NMA HR1075-76; also see PSAS xlv 1910-11 18 for other hut-circles of comparable nature from Sutherland). The sherds from a stone circle at Monzie, Perthshire, may be considered as possible members of this Late Bronze Age group; they are coarse but well-fired, with internally-bevelled rims and much grit, but lack any slip (PSAS lxxii 1938-39 68). This pottery from the Perthshire hut-circles may well belong to the Covesea group, but more finds

are required before the ware can be definitely assigned to this horizon in the Late Bronze Age. The inclusion in the sherds from Dalnaglar of a finger-cordoned pot suggests an earlier tradition, but exact parallels have not yet been found (see slight finger-cordons at Carrowjames, Co.Mayo; Ronaldsway; Portstewart, Co.Derry; Ballintoy, Co.Antrim; at NMIreland). If the Perthshire hut-circle pottery is of the Covesea group, it appears to be somewhat removed from the area of initial occurrence, and its non-Covesea features may be thereby explained; possibly it represents a fusion of the Covesea tradition and the older native Cinerary-Urn or 'cooking-pot' tradition.

The pottery from Traprain Law is discussed elsewhere in connection with the settlement there, but a brief summary will not be out of place. Generally the ware is hard-fired, and a considerable number of sherds contain much small grit; some of the ware is clearly of poorer quality, with coarse grits and flaky texture, but this is of less importance than the rim forms, which show enormous variation, only a small proportion with internal bevels, most plain, and some everted. These last are totally out of keeping with the normal Covesea ware, but again the absence of proper stratigraphical levels may mean that all the foreign types belong to the later Votadinian ware, and that at Traprain there does exist a true level of Bronze Age occupation with Covesea-type pottery.

Numerous sherds are hard-fired and have much small grit and thin walls, and may be akin to the Covesea group, but in the

absence of any objects of undoubted Covesea date, the conclusion must be that Traprain Law does not exhibit enough evidence to permit its inclusion in the Comesea group. Many of the coarser pots show internally-bevelled rims, in keeping with the Bronze Age form, but most of these are somewhat slackened, less sharp than those at Old Keig for example; the occurrence of shouldered sherds of coarse fabric may represent a debased version of Iron Age ware, and in this again the connections with Jarlshof are stressed.

The Traprain girdle-ring (Burley 1956 T32) has an exact parallel at Lough Gara, which is believed to belong to the Knocknalappa group with an initial date not earlier than the fifth century. The iron objects and influences apparent at Lough Gara and Traprain Law support their dating in the later stages of the Late Bronze Age. The discussion of Traprain pottery in connection with the Ingram Hill and Votadinian ware illustrates the belief that the Late Bronze Age pottery continued without interruption into Roman and post-Roman times, but the differentiation between the true Covesea ware and the ordinary Bronze Age traditional ware is not made, and the report then only shows the continuance of the coarser pottery of bucket shape through the centuries before and after the first century A.D.

The pottery from the Late Bronze and Early Iron Ages at Jarlshof has also been discussed in connection with the settlement there, dating to the later part of the first millenium B.C., and it has been shown that the ware is not believed to illustrate any connect-

ions with the Covesea group. The pottery from the Late Bronze Age village is generally hard-baked, with considerable grit, and the bucket-shape predominates with flat or rounded rims. A few rolled rims also occur, and occasionally cordons have been applied just below the lip. The succeeding settlements however yield pottery of a different form, shouldered with flattened rims as well as finger-tip and pricked decoration, and the two levels with this intrusive type of ware are thought to be of Iron Age date.

The shouldered and necked urns from Jarlshof and Traprain, if these from the latter site can be connected with the Late Bronze Age settlement, thus may represent some influence from Iron Age A in the south of Britain, and in this they may be connected with the Knocknalappa group of Ireland, although the basic pottery form of the two areas is somewhat different; nevertheless, the girdle-rings at Traprain and Lough Gara, and the iron objects as well, suggest some measure of contemporaneity. The shouldered pots from the settlement at Jarlshof are now believed to date to the closing centuries B.C., and as stated they show no connection with the earlier occupation there, of truly Late Bronze Age folk, so that if Jarlshof Iron Age is considered as parallel to Traprain, lower levels, as suggested by the pottery, then the two sites post-date the Covesea group by several centuries. This is in support of the contention that the Knocknalappa group must also be later in date than the Covesea group, and the possible Iron Age influence seen in the pottery from Knocknalappa as from Jarlshof and possibly Traprain is not attested at Covesea in the slightest

degree.

It is not proposed to enter into a detailed discussion of the English sites purported to have yielded Flat-Rim pottery. The main concentration in the north-east of England is clearly not of the Covesea group, nor of the Knocknalappa group, and appears to be nothing more than degenerate Food-Vessels and Cordoned Urns, dating to the Middle Bronze Age and hardly later. Their form, associations and fabric support this conclusion, and the Largs urns should also be considered in like manner (Arch lxii 1910 239), as well as those from Shalford, Essex (Ant J iv 1924 265).

The ware from Heathery Burn is different, as it has been recently dated to the early seventh century and no earlier. The sherds that have survived are not equivalent to Covesea ware in any respect, as the carinated sherds, one perforated, and the small bowl demonstrate. In addition the fabric is not clearly of one type, some few sherds showing coarse grits and thick walls, obviously a rough native ware as is found at other sites as noted. Other sherds however are of a different nature, and include the carinated pot as one of its rare members. This ware is hard, well-fired, and has very little grit; the texture is rather closer to the Kildalton pottery than to Covesea ware, and it is indeed suggestive that at Kildalton two sherds at least showed this carination, one of which may be considered as equivalent in fabric to this better Heathery pottery.

However the Kildalton-Traprain comparison already cited is better founded than that of Kildalton-Heathery Burn. It is possible

of course that all three sites may be related in some way, but this can not be proved, and it seems better to connect only the first two mentioned. As the ware from Heathery Burn is clearly dated to the seventh century, roughly contemporary with the true Covesea ware, then some relationship should be demonstrable in view of the geographical positions. However, neither in bronzes nor pottery can any close links be ascertained, except in the valueless common association with bifid razors, at Heathery and the Braes of Gight. Furthermore, the Knocknalappa group does not appear to have any close resemblance to Heathery Burn, as the pottery is totally different and the associated objects constitute only Irish types not seen at the Durham site.

The occurrence of lignite bracelets at Heathery Burn, Old Keig, and Traprain Law, is taken as representing nothing more than the chance finds of a relatively common object in Late Bronze and Early Iron Age contexts. No stratigraphical positions can be established at the two last-named sites.

Several sites from the south-west of Scotland and adjacent areas seem to show some measure of typological similarities to Kildalton and Heathery Burn, either by decoration or perforation, and may be briefly mentioned here, although none may be dated conclusively to a time contemporary with Heathery Burn. The pottery from sand sites at Ballevulin, Tiree, may be related both by its texture and its form and decoration, this last being somewhat similar to the decorated pot from Kildalton. Sherds from Prestwick, reputedly found in an Iron Age context, possibly at

a site at Monkton Farm, might be considered in this regard, although slightly coarser than the majority of pottery from the sites mentioned. A site on Coll has yielded two sherds that might belong to the Ballevulin and Prestwick type, but the connections with Heathery Burn are not considered close. Other perforated sherds, from Coalhill, Dalry, Ayrshire, and a shouldered sherd from Loch Hasco, Skye, may well be considered as showing some resemblance to the Heathery Burn pottery, and this may connect the Kildalton bowl with the group.

Coarser ware from Shewalton Moor, Irvine, Ayrshire, is of the same texture as that from Coalhill, as is the ware from Garrochar, Creetown, Kirkcudbright, this last however showing perforations below the rims, and matched in the pottery from North End, Walney Island, and from Ballintoy, Co.Antrim, and Mullaghmore; this ware is bucket-shaped, with rounded or flattened rims, and may be coarse although the sites noted show harder-fired sherds. The few sherds from Kilmoyle, near Ballycastle, Co.Antrim, may also be of this type, harder-fired but unrelated to Covesea or Knocknalappa.[1]

It should be noted that all these Scottish sites are situated on the west coast, mostly in the southern part, and it is possible that they may form some sort of grouping equivalent to the Covesea

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[1] Ballevulin, Hunterian Mus.B1951; Prestwick, Hunterian Mus.A1927.6; Coll, NMA BN14,16; Coalhill, NMA HH337A1931 712A-B; Loch Hasco, NMA HD1183 1952 762; Shewalton, Hunterian Mus.B1951 330; Garrochar, Dumf & Gall Trans xxiii 1940-44 136; North End, Trans Cumb & Westm Ant & Arch Soc lv 1955 1;Ballintoy, NMIrel 1898.125,1905.269; Mullaghmore, Proudfoot 1956; Kilmoyle, NMIrel R139 SH21.2.

and Knocknalappa groups. This south-western grouping probably is related to the north-east Irish sites, and may also be connected with similar perforated bucket-urns from Culver Hole, Llangynydd, Glamorgan, and Llanarth, Cards (Savory 1958 49). An Irish Sea province may then have existed in the later phases of the Late Bronze Age in the Highland Zone, possibly contemporary with the Knocknalappa group, probably later than Covesea. However, the perforated ware from Heathery Burn appears to be related in some ways to this Irish Sea grouping, and the occurrence of Yorkshire ribbed axes in Wales may be noted in this regard. If Heathery Burn is a member of the group, then the latter's partial contemporaneity with the north-east Scottish Covesea group is assured.

Other stray pottery from Scottish sites bears some superficial resemblance to the poorer ware from most of the groups, including sherds from Tents Muir, Culbin Sands, and Forvie Sands, but this is not held to be of any importance. The Bonchester Hill ware, clearly not of the Covesea group, seems to illustrate some connection with or mixture of Iron Age forms and native traditional pottery, and this may be compared with the probable similar conglomeration at Traprain Law. Port Stewart, Co.Derry, may also be included here, with some sherds of the finer Traprain type and others much thicker and coarser, found with iron slag (NMIreland 1933.4586-4628).

If this comparison is sound, the dating problem of Traprain, and via this of the Knocknalappa group through Lough Gara, may be resolved in the last centuries B.C. The Covesea group however,

remains separate from this problem, and the lack of any connections in pottery or bronzes between this group and the other(s) is suggestive that the interpretation here adopted is basically correct, that Covesea is of the seventh century, and Knocknalappa and Traprain and Jarlshof are later, possibly of the fifth century but extending down into the last centuries B.C.

ETHNOLOGICAL CONSIDERATIONS

The distribution of objects of the Covesea group suggests that there may be some connection with the Pictish problem, as recently reviewed by Piggott and Jackson (in Wainwright et al 1955). In brief, the position appears to be this. The Pictish language is a P-Celtic language, and is generally held to represent a separate speech of Gallo-Brittonic origin, allied to both Gaulish and Brittonic and yet distinct from both.

The evidence is divided by Jackson into five groups and may be briefly noted here. The Pictish king-list shows many Celtic names and some non-Celtic ones, but all the Celtic names are P-Celtic. The inscriptions are entirely foreign, not Celtic nor even Indo-European in origin. Tribal names of the proto-Pictish period, in the first century A.D., are P-Celtic although some are non-Celtic. Place-name elements in Pictland, north-east Scotland, are P-Celtic. The evidence of Bede shows that the Picts spoke a language distinct from Gaelic and from Brittonic. It thus appears that there is no support for the proposition that Pictish is Q-Celtic, and any elements of this may be explained as the result of contact with the Gaelic Scots from the fifth century A.D.

Although Celtic words and names are often P-Celtic, there is some evidence that the Pictish language was not British, not merely a northern form of Brittonic. Pictish Celtic has certain affinities with Gaulish that are lacking in Brittonic, although in general it is indistinguishable from Brittonic, the language spoken south of the Clyde-Forth line. Pictish is generally considered to be a third dialect of the P-

Celtic family, parallel to Gaulish and Brittonic, closely related to but distinct from both, and descended from their Gallo-Brittonic stem.

This linguistic evidence is interpreted as showing that in Scotland before the arrival of the Irish Gaels in the fifth century A.D., two languages existed, one a Gallo-Brittonic dialect related to but distinct from the Brittonic spoken south of the Forth-Clyde line, the other not Celtic at all, nor even Indo-European, but the speech of an early people who had existed undisturbed in Scotland since early second-millenium times. The settlers with a Gallo-Brittonic language merged with the older people, and adopted some of their names and customs that today seem distinctly foreign to the Celtic peoples. Now archaeological evidence suggests that the early colonizers of Scotland remained undisturbed from their arrival early in the second millenium. Presumably these people spoke a non-Indo European language which continued relatively unchanged and the sole language of the area until the arrival in the late second or early first century B.C. of a people with a Celtic language.

The present view is that a people with a P-Celtic dialect, the builders of the vitrified forts, settled in north-east Scotland in the late second or early first century B.C. They are believed to have come from southern England, and mingled on arrival with the older population of Bronze Age economy and culture, borrowing some customs and some non-Indo European names and words. The distribution of oblong vitrified forts, distinct from the vitrified forts of the west, suggests that these new settlers arrived in the east and spread to the west where their P-Celtic language was submerged by Gaelic earlier than in the east.

If the vitrified fort builders were the speakers of P-

Celtic, and if the culture reached Scotland directly from the continent, Gaul, then this explains the reason why Pictish Celtic is distinct from Brittonic yet still in the Gallo-Brittonic family. However, as stated, the present opinion is that the vitrified fort culture reached Scotland from the south of England in the last centuries B.C., as an offshoot of the Hallstatt Iron Age there. This leaves the problem of the difference between Pictish and Brittonic Celtic unexplained. The Celtic people of Britain south of the Forth-Clyde were by the first century A.D. mainly La Tene in culture, mixed, of course, with some Hallstatt elements, and this seems to have been the culture of the Brittones. If, however, the Celtic element of the early proto-Picts in Scotland was of the older unmixed Hallstatt origin, then the differences between Pictish and Brittonic is explained. As Brittonic in England overlaid the older Hallstatt one, and Pictish Celtic is P-Celtic of Hallstatt antecedents, then the arrival in Scotland of this Hallstatt Celtic may show a date before the establishment of P-Celtic of La Tene antecedents or Brittonic. This is over-stating the case, for Pictish Celtic is closely related to Brittonic, but nevertheless differences of importance can be distinguished, and these suggest that the Celtic speakers who arrived in Pictland were distinct from the Celtic speakers in the south.

Now as Pictish Celtic is deemed to show important differences from La Tene Celtic, as stated above, then an explanation may be that the Pictish dialect arrived in Scotland in pre-La Tene times, in southern English terms and dates, or before the mid-third century B.C. The English Hallstatt Iron Age began in the fifth (or sixth) century, and the La Tene in the third, but there was no effective settlement north

of Yorkshire before the first century B.C. The hitherto hypothetical Hallstatt colonists of Pictland, of seventh and sixth century date, thus assume some importance, as they presumably spoke some sort of Celtic dialect, and the suggestion is here advanced that these people represent an element of population that subsequently produced the effective Picts. It must be emphasized that the theory is only advanced with reservations, and is highly tentative, but nevertheless the evidence seems to fit the problem well.

Map 25 shows those objects that are considered to belong to the Covesea group dated to the seventh and/or sixth centuries B.C. The importance of this group lies in its distributional similarity to various Pictish elements (op. cit. 147) which are limited to the area between the Forth and the Moray Firth, with an extension up to the Dornoch Firth. Now if these Covesea group objects are merely imports in the usual course of trade, then their importance on the Pictish problem is negligible. However, the establishment of the group as representatives of the arrival of settlers in the area means that a Celtic language was spoken in Pictland well before the arrival of the vitrified fort builders in the last centuries B.C.

Turning to these forts, the suggestion is also advanced, however, tentatively, that these may be sub-divided into several regional groups, one of which coincides with the area of the Covesea people. The forts in question have three features that characterize and distinguish them from the others, in their large size, oblong and roughly parallel sides, and well. In the list appended, it will be seen that this group cuts across the Abernethy group defined by Childe (1935, 236 ff; 1946

12 - 15, 129 - 130) and restated by Cotton (1954, 29 - 38). These forts have not yielded many dating features, but have nevertheless been assigned to a period not much before the first century B.C. (Piggott, 1958, 79), considerably later than the arrival of the Covesea group, but more or less contemporary with the south Scottish forts (C.M. Piggott, 1947 - 50). The vitrified forts of the Pictish area have been explained as showing their derivation from south English forts in their timber-lacing, but they lack the vertical posts as seen at Hollingbury (Ant. J. xiii, 1933, 162). The analogous finds from the three areas, south England, south Scotland and Pictland, (Hollingbury is earlier in date), illustrates that the group of vitrified forts in Pictland must be dated to a time considerably later than the arrival of the Covesea people. But we have seen that possibly the Celtic language had been established in the area in the mid-first millenium B.C., and it is equally possible that the idea of timber-laced forts arrived at the same time. If this can be established, then the distinctive nature of the Forth-Moray region, so apparent in the first millenium A.D., may well have been achieved in the first millenium B.C.

Without involved study of continental material, it can be stated that the timber-laced nature of fort construction had been evolved by Late Urnfield times, contemporary with or immediately preceding the Covesea incursion. Camp du Chateau, Pretin, Salins, Jura, has been only partially excavated and the various reports (see list appended) hardly link the defences and the occupation levels in any conclusive manner; the section suggests that the earlier levels may antedate the ramparts, but later notes claim that one of the calcined ramparts is

Hallstatt B. Another site, Mont Lassois, Cote d'Or, is dated to the eighth century B.C., but the exact nature of the defences is not specified. In Belgium the forts do not appear to be earlier than Hallstatt D, but several forts in adjacent regions appear to have been conceived in earlier periods.

The Ipf, Bopfingen, Württemberg, shows probable La Tène timber-lacing, with vertical posts, and an inner rampart is dated to "Early and Late Hallstatt"; however, the nature of this bank is again not specified. The Goldberg, in the same area, may have had timber-laced rampart prior to its late Hallstatt lacing with vertical posts. Die Heuneburg has been dated to early Hallstatt D for its timber-laced defences. The Lehnensburg however shows a similar structure dated to "die drittestufe der Hallstattzeit, in die Zeit der polychromen Keramik ... in der Zeit der höchsten Blüte der Hallstattkultur", and thus seems to show the existence of the timber-laced rampart idea in Germany in the early Hallstatt period. This is substantiated in the fort at Wittnau, near Homberg, where the first timber-laced defences are of Hallstatt B, with a more or less similar reconstruction in the late Hallstatt (D). The wall appears to have a vertical stone face with horizontal timbers in layers behind, and lateral timbering as well. It is from this area, the Middle Rhine and points north, that the distinctive Covesea objects appear to have arrived in Scotland.

The suggestion then is that, in the seventh and sixth centuries B.C., immigration to eastern Scotland probably brought the Celtic language and may have brought the idea of timber-laced forts, and these people should be considered as the possible ancestors of the later people called Picts.

Vitrified Forts with parallel sides, wells, and of large size.

Knock Farril, Ross. NH505585

Ord Hill, Kessock, Ross. NH663491

Craig Phadrig, Inverness. NH640453

Dun Evan, Nairn. NH827475

Burghead, Morayshire. NJ108690 (Gallic)

Dunnideer, Aberdeenshire. NJ613281

Tap o'Noth, Aberdeenshire. NJ485293

Green Cairn, Kincardineshire. NO633723

White Caterthun, Angus. NO54 66

Denoon Law, Angus. NO355444

Dundee Law, Angus. NO391313

Finavon, Angus. NO506556

The Laws, Drumsturdy, Monifieth, Angus. NO493349

Forgandenny, Perthshire. NO10 15

Machany, Perthshire. NN90 15

Castlelaw, Abernethy, Perthshire. NO183153

Barryhill, Alyth, Perthshire. NO263504

(R.W. Feachem)

Continental forts with timber-laced ramparts (selected).

Camp du Chateau, Pretin, Salins, Jura - Dechelette ii, 1913, 696-7, fig. 265;
Piroutet and Dechelette R.A. xiii, 4th ser 1909, 193-212;
Lantier Gallia xii, 1954, 473-4; Gallia xv 1957, 289;
Piroutet Bull de Revue des Musees 1931, 31-32.

Mont Lassois, Cote d'Or - Lantier Gallia xv, 1957, 288.

Belgium - de Laet, The Low Countries, 166.

The Ipf, Bopfingen, Wurttemberg - Hertlein Fundberichte aus Schwaven xv,
1907 368, xvi 1908, 28-33.

The Goldberg, Wurttemburg - ibid xx, 1912, 25-29.

Die Heuneburg - Germania xxxii, 1954, 22ff.

The Lehnensburg - F. aus S. xxi 32; xxii, 63n.

Wittnau, Homberg - Bersu Das Wittnauer Horn, 1945, 27-35.

PHASES IN THE LATE BRONZE AGE OF SCOTLAND

LBA_1 - Glentrool:

The earliest phase of the Scottish Late Bronze Age might equally as well be attributed to the end of the Middle Bronze Age, but as both Hodges (1956, 75) and Savory (1958, 22) have considered the period to be early LBA 'A' and LBA_1 of Ireland and Wales respectively, it seems more convenient to accept this nomenclature and to consider the Glentrool horizon as of the Late Bronze Age.+

The recognition that certain types of bronze objects in Britain pre-dated the Wilburton phase, formerly British LBA_1, was first made by J. Butler (unpublished thesis for Institute of Archaeology), and has since been elaborated and published by Hodges (1956, 29-) and Savory (1958, 16-). This early phase is better called the Taunton-Barton Bendish phase, or TBB, to avoid confusion over the old and new uses of LBA_1.

The TBB period resulted from the arrival in southern England, particularly in the Somerset region, of strong influences from Northern Europe. In general the objects typical of this period have a distribution limited to southern England, Wales and Ireland (Hodges, op. cit. map fig. 2; Savory op. cit. map fig. 8), but Scotland too has distinctive bronzes.

The Taunton-type socketed axe is closely related to Sprockhoff's Hademarschen type which has a distribution limited to Germany between the Elbe and Oder (Sprockhoff, 1941, 112, abb 86), and is characterized by a single flat moulding and small loop as well as by its square section and straight sides. In Germany the axe is dated to

+ see Addendum following page 352

Montelius III - IV at Hademarschen, Farbezin and Menzlin (ibid taf. 59-61). The similar Taunton-type of the British Isles is mainly found in southern England (Hodges 1956, list 50 to which additions may be made), including one in the Taunton Workhouse hoard (Arch. J. XXXVII, 1880, 94), but several are known from Ireland, the most important being a slightly atypical one in the Bishopsland hoard (Savory 1958, 17, n7; also unprovenanced example in N.M. Ireland). Savory has listed a similar axe from Merioneth, Wales, although its heavy collar is unlike that of the average Taunton axe.

The Kingoldrum, Angus, specimen is more closely related to the English Taunton-type (NMA DE 12), and the Irish axes also are probably the result of influence from Somerset, but a second Scottish axe, from Annan, Dumfries, appears to be of the true Hademarschen type (NMA DE 80). A larger axe from North Berwick Law may be a copy of the Taunton type (NMA DE 91).

In this connection, the socketed axes of the succeeding Wilburton phase, LBA_2, may be related to this early British type. It is not difficult to see a relationship between the Taunton type and an axe in the Wilburton hoard (Fox 1923, pl X, 3), and between this latter and the east English type (e.g. Inv. Arch. GB18, 19; GB 13, 28).

A bronze shaft-hole battleaxe found at Bannockburn has long been considered as of mediaeval date, but as it is apparently an unique object if of this period, its close analogies in Scandinavian Montelius II contexts should be considered as suggesting that it belongs to the Glentrool phase of the Late Bronze Age, if not slightly earlier. The shaft-hole, wide recurved blade, and conical projections all combine

to relate this axe to Scandinavian objects (e.g. Broholm DO iii fig. 113; Montelius 1922, fig. 883), and the rope moulding, while not seen on these Northern axes, is nevertheless a Bronze Age decorative motif (e.g. Hodges 1954, fig. 2, 6). While exact parallels for the Bannockburn axe are not known, according to Prof. C. Becker, the evidence of Scandinavia-Scotland contact in Montelius II - III supports the suggestion that this axe is a Northern type.

A single-edged tanged knife, formerly in the Clerk of Penicuik collection, if of Scottish provenance, illustrates the same contact as is seen in the Ffynhonnau, Brecon, hoard (Munro 1899, fig. 89; Savory 1958, fig. 3). The type is dated to Hallstatt A on the continent, and possibly falls within this early phase of the Scottish Late Bronze Age. The single-edged socketed knife from Crossraguel, Ayrshire, is probably somewhat later in date (Munro op. cit. fig. 89; Childe 1935, 154 with reference).

Twisted bar neckrings and bracelets are another distinctive feature of the TBB phase. Twisted ornaments occur in Central Europe in Tumulus Bronze (e.g. Germania, XX, 1938, 7- abb 1), but only in Urnfield times did twisted neckrings become common in this area. In Northern Europe, however, twisted metalwork developed from Montelius II onwards, and it is in this region that the British objects of the TBB phase have their closest analogies.

Twisted bar neckrings with hooked terminals, such as occur in the Glentrool hoard, belong to Kersten's form 2, and are commonly found in Montelius III contexts in Denmark and Schleswig-Holstein (Kersten 1936, 36-). The neckrings are made by twisting a square-sectioned bar, with the terminals untwisted and left square or rounded

off. Variants occur in this northern area, but most of the British neckrings, generally cast, are unrelated to these possibly later types.

In Britain the form 2 neckrings are mainly found in the south, especially Somerset, and are commonly associated with other objects of the TBB phase, as at Monkswood (Arch. lxxi, 1921, 138) and Edington Burtle (PSANHS, V 1854, 91). At the latter site and at Wedmore, these cast bronze neckrings were found with bronze ribbon torcs, which as previously detailed, need not be dated as early as the Middle Bronze Age. The Winterhay, Somerset, hoard suggests that some gold ribbon torcs belong to this TBB phase. Both bronze and gold ribbon torcs occur in the Law Farm hoard, and it is thus possible that some at least of the Scottish ribbon torcs are of this early LBA phase.

In addition, the square-sectioned Sussex or Brighton loops may also be considered as contemporary with the TBB phase, in view of their associations with a neckring at Hollingbury (Arch J. V. 1848, 323), and their crude resemblance to the Barton Bendish type (Inv. Arch. GB 7, 5). This twisted and looped bracelet may be compared with Northern bracelets which lack hooks (Sprockhoff 1937; von Brunn 1954[a] 53), dated to Montelius IV, and larger bracelets with hooks from Brandenberg (Bohm 1935, 135 no. 43, taf. 23, 2), of Montelius III date. A late copy occurs in the Venat hoard (C. Piggott 1949, 114), and untwisted forms, also of later date, come from Heathery Burn (Arch. liv 1892, 88-).

The ribbed bracelets, as at Ramsgate, Kent (C. Piggott, 1949, 118- , list 120), with close-set narrow ribs and straight plain terminals, are also linked to this horizon at West Buckland (Arch. J. xxxvii 1880, 107) and Monkswood; the form appears in the north of Europe

in Montelius II, but the British-Northern connections are of the following period (Kersten 1936, 48-).

Also absent from Scotland are other decorative objects such as loop-headed pins which occur in hoards as at Taunton Workhouse (map 3, Savory 1958) and the Blackrock ring now dated to Montelius III (C. Piggott op. cit. 108- ; Curwen 1954, 202-3).

Gold bracelets and neckrings, commonly found in Ireland, are mostly of purely local type, but a few may be related to Northern forms. Those from St. John's, Co. Carlow, appear to be of Kersten's form E9, penannular with short plain terminals, and are therefore dated to Montelius III (Armstrong 1933, no. 82-83, pl. xiii, 105 and 110); gold copies of form 2 also exist (ibid pl. xii, 84 and 86). The lozenge-sectioned gold bracelet from Stonehill, Lanarkshire, found with two Type 1 armlets, occurs in bronze in the Somerset hoards and may link Iberia with Britain in this TBB phase, as previously noted, but the gold examples appear to be of later date; Savory lists other objects common to both areas (1958 20; Proudfoot 1955, 23).

The Glentrool pin is unrepresented in the south of England, but pins with plain disc head, straight stem and low side loop, exactly similar, are known from northern Europe where they are dated to Montelius II - III (Janssen 1935, abb 5 and 7; Bohn 1935, taf 10, 19; Mendaler Beitrage iii, 1910-14, 78). Two pins of this type were found in Ireland (B.M. 91.4-20.5; Ashmolean 1927/2853).

The disc-headed side-looped pins from southern England and northern France are not at all similar to these Northern pins, and can be related more closely to Central Europe; they appear to be a

late Tumulus type with some Urnfield influence (Hawkes 1942, 34- ; C. Piggott 1949, 112, fig. 3).

Other objects that have been assigned to this TBB phase, but not found in Scotland, include trunnion chisels or axes, ridge button sickles, and bronze saws, all of which occur in the Bishopsland hoard (PPS xii 1946, pl. xiii); a trunnion chisel of British form was found with several palstaves at Voorhout, South Holland (Sprockhoff, 1941, taf. 30), and the limited occurrence of saws is noted by Savory (op. cit. 17; Monkton, Pembrokeshire). Ridge-button sickles were found at Monkswood and Edington Burtle, and at Bishopsland, and have Scandinavian parallels in Montelius II- III. Savory notes a ring-socketed sickle, of Fox's earlier stages, from Portugal, found with a type of palstave that occurs in Ireland, and suggests that this find links with the distribution of Class II razors and double-looped palstaves (op. cit. 19-20).

Sprockhoff includes the Cothill, Berkshire, razor-knife in his northern group of this period (1941, abb 69, 2). The slender socketed hammer from the Inshoch Wood hoard is related to the Bishopsland example and to one from Taunton Workhouse, and shows that the associated Class IV spearhead may be assigned to LBA_1; the comparison with the Burgesses' Meadow, Oxford, hoard is important (Inv. Arch. GB 6). The anvil from Inshoch also has parallels in Scandinavian Montelius III (Broholm DOiv, no. 425).

The Ballintober sword type appears by distribution and association to belong to this early period, although its Northern connections are not apparent and it must be a local development based on the first appearance of the leaf-bladed sword, although Savory suggests the

eighth century). Other purely local types include the Eriswell rapier-sword (Ant. J. XXXV, 1955, 218-9)[1] ?Rixheim and the Sollas Moss sword (Carlisle Museum).

Hodges assigns his Stages I and II shields to his LBA 'A' but the evidence at this time does not warrant their inclusion here. The Glentrool hoard, in addition to its Somerset and Northern analogies already cited, also contains a tanged and perforated knife matched in the Monkswood hoard.

Some Class II razors also belong to this early period, as is shown by their distribution (Savory 1958 20, the ninth century Sicilian example, Hencken 1955, 160) and their occurrence in the Glentrool hoard, although they are somewhat atypical. Other objects at Glentrool include amber, which is not out of place in a Scandinavian context, and a Class IIIA spearhead.

This spearhead is typologically extremely close to one from New Downie, Angus (NMA DG 61), but the other Scottish examples are presumably of the same horizon. A specialized class, those with mere perforations in the blade base, are mainly seen in the Border area, and may be somewhat later. The occurrence of many Class IIIA spearheads in Northern Europe, (e.g. Liesbuttel, Holstein; early Montelius II; Wiesloch, Baden, early Urnfield), can be nothing other than a reflection of the trade between Britain and the North at this early time.

The distribution of these basal-looped spearheads is clearly south English, and they occur in the Somerset hoards as well as in the Thames area and East Anglis (Evans 1933, 194, fig. 1). The comparative rarity of the type in Scotland and Wales supports the argument for the development of a considerable bronze industry in the

the south in LBA_1, notwithstanding Hodges (1956, 47; few Irish stone moulds are for Class IIIA spearheads). Class IV spearheads appear to belong partly at least to this period, in view of the Inshoch wood hoard, and the?association of this type with rapiers at Callander. Perforated-loop spearheads may also be included here.

As most of the objects in the Somerset hoards are clearly British in type, in other words that the hoards are not wholesale importations, the existence of a fully-developed bronze industry in Britain at this early date is established. The types of palstave found throughout the areas of contact and dated to this early period are primarily western, and may be plain or with midrib, more rarely with shield or trident pattern. As they are assigned to Montelius II in the North, they clearly must be of the British Middle Bronze Age, but appear to extend into LBA_1, or LBA 'A'.

Voorhout has trunnion chisels and unlooped palstaves of these types (BRGK 1941, pl. 26), and Savory lists a hoard from Pennavern, Finistere, which contains looped midrib palstaves, Class II razor, rapiers, and a slender socketed hammer (1958, 19, n2).

In addition to a form of double-looped palstave with its suggestions for Iberian finds (but see Savory op. cit. 20, n5), the West Buckland hoard contained a single-looped palstave with midrib. Now it is this type of palstave, with stout midrib and loop, that is seen in several of the Scottish palstave hoards, and these may therefore be considered in our earliest phase of the Late Bronze Age, as their distribution has suggested in a tentative way.

Childe made a statistical study of geographical groups of bronze types, and suggested that the evidence pointed to a survival

of Middle Bronze Age, and even Early Bronze Age, objects into the Scottish Late Bronze Age (Childe 1935, 148 ff). He based this on figures from southern England, as listed by Fox (1923, 18), which showed that from each successive period of the Bronze Age, greater numbers of objects should have survived. This of course depends upon two factors, that the successive periods were of approximately equal length, and that proportionate numbers have been found. In Scotland it is uncertain that the latter point has been established, more uncertain than in more southerly regions, where agriculture has been more intensive and extensive, and the former point also is in some doubt because of the evidence that the Late Bronze Age ended only in the late second century B.C., and is thus considerably longer in duration than the earlier periods of the Bronze Age.

Nevertheless, disregarding these theoretical arguments, the figures as published by Childe suggested that earlier bronze types persisted in the North into the Late Bronze Age, with the Far North figures showing 14 EBA axes, 7 MBA axes, 17 LBA axes, showing a survival of EBA types into the MBA, and possibly both into the LBA. Childe also argued that MBA types outnumbered (proportionately as compared with the south English control) LBA types in the south-west and north-east, and therefore assumed that the earlier types existed into the LBA. The control of course is clearly rendered suspect by the distinction between types of hoards in Lowland and Highland Zones, large founders' hoards in the former, smaller personal or traders' hoards in the latter (see Hodges, 1957).

This idea of retardation in the Highland Zone was supported, Childe thought, by Glentrool, where the early types were associated with

a palstave recalling the late winged axes of southern England. As we have seen, Glentrool cannot be later than c.1000 B.C., and so this argument may be dismissed. Further, the numbers of MBA and LBA objects listed by Childe, especially in the north-east, require revision, partly in view of recent finds. Instead of palstaves 33, and socketed axes 44, the numbers should be c.40 and c.80 respectively, showing that in this region, at least, the displacement of MBA industries by LBA industries seems to have taken place in accordance with the regions compared, and a survival or retarded arrival need not be invoked. The rarity in this area of late forms of palstave is also conclusive.

However, different conclusions must be drawn in the south-west, where the socketed axe does not outnumber the palstave at all, and where late forms of palstave are concentrated (c.30 socketed axes and c.30 palstaves, late forms over 15). The lack of associated finds in this area creates a problem, but the conclusion is that this south-west area continued to use the earlier types well into the Late Bronze Age, probably along with the later types, as occurs in southern England (also at Gospertie, Fife; late form of palstave with faceted axe and Class V spearhead).

The palstave hoards from Scotland are four in number, two from Wigtownshire and two from north Sutherland, all of which, it will be noted, lie on the Irish Sea - Scandinavia sea route. Palstaves of the earliest Late Bronze Age phase have recently been described by Savory (1958, 22ff, fig. 1). Shield pattern palstaves, without loop, are absent from the Scottish hoards, but several stray finds have been noted (e.g. near Perth, NMA DC 113, Tilliery Hill NMA DC 103) which may be of the

Middle Bronze Age or of the Glentrool phase of the Late Bronze Age.

However, palstaves with midrib decoration, and with flanged sides extending below the stop, are considered somewhat later and, in looped form, belong to the TBB phase. They are commonly found in eastern England and also occur in several of the Somerset hoards. The type is rare in Scotland, but a somewhat similar palstave occurred in the Balcarry, Wigtownshire, hoard, without loop however (BM 75.11-13.1).

The other two palstaves here are without loop and decoration, and recall one of the Caldonshill palstaves found not far away (BM 75.11 - 13. 2 and 3, Balcarry; NMA DQ 209, Caldonshill). The other Caldonshill palstaves resemble the looped examples with stout midrib and no flange extension that occur in the Somerset hoards and Ireland. A similar palstave belongs to the Kirtomy, Sutherland, hoard associated with a midrib-and-trident decorated palstave, with loop (Dunrobin Castle Museum). This latter form is matched in the Craig-a-Bhodaich hoard in the same parish (NMA DQ 91).

The other member of this hoard has a stout midrib as seen at Kirtomy and Caldonshill. These three associated finds may thus be linked typologically, and presumably chronologically as well. The trident pattern palstave is always looped and is generally assigned to the Late Bronze Age by both typological (Hawkes' scheme) considerations and by associations (Cemmaes Mont, Savory 1958, 24; Grimes 1951, fig. 64; see also Grunty Fen CAS xii, pl. 111).

In addition, the plain looped palstave in the Caldonshill hoard (NMA DQ 207) is comparable to the Bishopsland palstave (PPS XII, 1946, pl. xiii) although the faint pattern on this latter specimen may

also be connected with a palstave from Craig-a-Bhodaich. In any event, the conclusion is the same, that these three hoards, two from Sutherland, one from Wigtownshire, belong to the Glentrool horizon of the Scottish Late Bronze Age. The plain type of palstave, with loop, apparently survived into a later period, as at Guilsfield (Grimes 1951, fig. 70), but associations in Scotland do not suggest that this was anything but a local event. (see p. 185).

The fourth palstave hoard, from Balcarry, is not as clearly assignable to the Glentrool horizon. None of the three palstaves are looped, and although one, as stated, recalls the midrib and flanged palstaves of more southern areas, the others can be connected only in a general way with the Caldonshill hoard. The Glentrool palstave (NMA DQ 240), is somewhat more elaborate, and suggests that the Balcarry hoard is slightly in advance of this Glentrool phase.

Some of the bronze two-piece moulds from England (Hodges 1954, list p. 80), for early palstave forms, may also be assigned to this early period. The occurrence of common forms of palstave throughout north Germany, southern England and coastal France, has led Sprockhoff to suggest that the mobility of bronze workers was considerable at this time. The Somerset hoards contain, in addition to these plain and midrib types, chevron or chevron-and-rib forms of decorated palstaves; these are often seen in northern Germany (BRGK 1941, pl. 24, 25, 30), occasionally in southern England but more common in north France (Savory 1958, 22), and show the development of specialized forms of palstaves, hardly represented in more northern Britain, in areas that witnessed the major contacts in this early period.

The distributions of ornaments also shows this, of course, and it would be interesting to see any differences existing between palstave forms of the Somerset and south-eastern England finds, in relation to the more Northern contacts of the former area, the more local developments of the latter area. These local developments clearly require some change in the statement that southern England did not possess a separate bronze industry until LBA_2 (Hodges 1956, 47).

The distribution of the other main Middle Bronze Age type, the rapier, shows a similar position in Galloway. Here, finds of leaf-bladed swords are extremely rare, under ten in number, while the number of rapiers exceeds this figure (six finds including Drumcoltran with about ten rapiers). The rapier is not at all common in Scotland, and the numbers of swords and rapiers in Galloway surely point to the persistence of the earlier type into a time during which swords were in use elsewhere, and this must be LBA_2. The Glentrool rapier appears to be earlier in date than those in the Callander find, but Drumcoltran need not be far removed either way. Rapiers occurred in the Eriswell, Cambs., hoard, and in some of the Somerset finds, with a Class IIIA spearhead at Maentwrog (Inv. Arch. GB 10) and ribbed palstaves at Crediton (op. cit. GB 4), most or all of which may be assigned to the TBB or LBA_1 phase.

The Glentrool hoard can hardly be younger than the eleventh century, in view of its Montelius II and III parallels, and its close connection with the Somerset hoards, and a suggested absolute date for the beginning of this Glentrool or LBA_1 phase is thus c.1100 B.C. The palaeobotanical evidence, mainly based on the Irish Recurrence

Surface C, generally with LBA objects above and MBA objects below, is now in a state of uncertainty, but the present suggestion is that this RS equates with Granlund's RS IV in Scandinavia, which roughly divides objects of Montelius III and IV. (Hencken 1951, 9; Savory 1958, 27). The absolute dating of these periods is again in dispute, but the suggested date for the transition III - IV is c.1100, although Hodges and Savory suggest c.900.

The terminal date for this Glentrool phase is more difficult to determine, but as will be shown, the succeeding Wilburton or LBA_2 phase received contacts and influence, faint though they were, from Scandinavian objects of Montelius IV, dated from c.1100 - 900 B.C. These contacts are rare in Scotland but do occur, and suggest an initial date for LBA_2 somewhere c.900 B.C. In addition, the appearance of a U-sword, probably of the tenth century, and a late form of V-type sword as well, point to a fairly early penetration from the south, where these types developed from the late Hallstatt A Erbenheim and Hemigkofen types.

A Wilburton-related sword at Corsbie Moss, Berwickshire, was found with a Class III spearhead, a normal Middle Bronze Age type, and this in itself suggests that the initial date of 900 B.C. for the Wilburton phase may not be too early. It is believed that the native sword, the Ewart Park type, developed c.800 B.C., before the arrival in the early seventh century of the Covesea-phase objects in the north-east (linked with Late Ewart swords), and as a direct relationship between the Wilburton and Ewart swords is suspected (Cowen 1933), then these suggested timings, based purely on typological groups, may well be reasonably accurate. The evidence then suggests that the Glentrool phase, LBA_1, ended with the arrival of purely Late Bronze Age objects

c.900 B.C., although the earlier types may have survived in the south-west.

LBA$_2$ - Wilburton:

The Glentrool phase saw the introduction into Scotland of north European objects and the gradual appearance of types normally considered to be of the Late Bronze Age, but basically this early phase was Middle Bronze Age in character. With the progressive infiltration of Scotland by southern types, clearly of Late Bronze Age character the country received its first overall impetus that led eventually to the establishment of a Late Bronze Age industry,(the term culture may hardly be applied to a record consisting mainly of artefacts) and so we may consider that this phase marks the true beginning of the Scottish Late Bronze Age. Nevertheless, in view of nomenclature (Hodges 1956, Savory 1958) it seems preferable to label this LBA$_2$, reserving LBA$_1$ for the first signs of contact with Northern industries containing Late Bronze Age types.

As the Glentrool or TBB phase depends upon Northern influence dated to Montelius II and III, so the Wilburton phase, Scottish LBA$_2$, may be dated by its Northern contacts of Montelius IV. In the south of England the carp's tongue phase is dated to a time contemporary with Montelius V or late Hallstatt B; no object of Montelius IV can be as late as late Hallstatt B, and therefore any imports of this Period IV must be pre-carp's tongue.

Although objects typical of the Wilburton complex of southern England are not common in Scotland, nevertheless contact between the areas was present and there seems little reason to allow any appreciable time lag before the members of the Wilburton complex arrived in the north. In England, the commencement of the Wilburton

phase appears to lie in the tenth century.

This is based partially upon the suggestion that the native Ewart sword developed from the Wilburton type to a certain extent (Cowen, 1933), and in this regard the Hover, Hanover, sword is of considerable importance. The sword appears to be of Ewart type with some Wilburton influence seen in the butt, and has been dated to late Montelius IV or early V by virtue of its association with a sword of Sprockhoff's Class IIIA (Cowen 1952, 136, pl. xv, 3).

As the prototype continental sword, the Hermgkofen type, is reliably dated to late Hallstatt A, the true Wilburton type can be fairly precisely assigned to the tenth and ninth centuries, hardly later, although Savory doubts whether the Wilburton sword had emerged before c.800 B.C. (1958, 30).

If then the Wilburton sword is dated to the years 1000 - 800 B.C., more probably early in this period, and the Hover sword, of Ewart type with Wilburton influence is probably of the ninth century, then the Ewart sword must have emerged before the end of the Wilburton phase c.700 B.C.

A Late Ewart sword from Denhead, Angus, was found with a lunate spearhead, this latter object generally considered to belong to the Wilburton phase in south England. However, in Scotland the lunate spearhead more properly belongs to the succeeding period, from 700 B.C., and so the Late Ewart sword may with confidence be assigned to this later phase, leaving the Wilburton and Ewart development to LBA_2, c.900 - 700 B.C.

Another link between Britain and the North at this time

is the Sorup Mose shield find. One of these shields is related as detailed, to the British Yetholm-type, the other is dated to Montelius IV by its boss-work, as at Pfeffingen, Wurttemberg (Behrens 1916, 32-abb 10) where this Punktbuckel style connects late Hallstatt A and Montelius IV.

Closer to Scotland, the Ffynhonnau, Wales, hoard has pointed ferrules of Central German type (but see Savory, 1958, 28) dated to Montelius IV (von Brunn 1954a, 7, taf. 2, 2-3) with a late Hallstatt A knife and midrib palstaves which may be considered as belonging generally to the TBB phase. The hoard may lie at about the transition point between LBA_1 and LBA_2; Savory suggests the earlier. The ? Scottish knife of this type has previously been noted.

The Wilburton complex clearly had its central point in eastern England, but spread its influence to the far north, Caithness, and into Ireland, as well as to the coastal areas of the continent (PPS, 1942, 38ff). Savory notes the occurrence of Wilburton-related swords and tongue chapes in the Gironde and the latter type with lunate spearheads in Iberia, and the indented socketed axe is also found in the south (Savory, 1958, 31). But the lunate spearhead may occur in later contexts, as at Huelva, and the indented socketed axe as well, (e.g. Nettleham, Lincs., with Clark's ribbed palstave group, Clark, 1940, 52-).

The type site for LBA_2 is Wilburton, Cambs. (Fox, 1923, pl. X); the principal objects in this hoard are the distinctive Wilburton-type sword, tongue chape, tubular ferrule, and indented socketed axes. Of these, only the last-named is absent from Scotland. Wilburton and related swords have an easterly distribution, as befits their derivation from south-east England, and have been found once in

association in Scotland. The Corsbie Moss, Berwickshire, hoard contained one of these related swords with a chape, and a spearhead of Class III. This type of spearhead is generally considered as of Middle Bronze Age, but clearly survived in the North into LBA_2, and its dominance in LBA_1 may thereby be assumed.

A sword from the Tay appears to be a Wilburton type but with some slight Ewart influence, and presumably falls somewhere midway in LBA_2, possibly in the eighth century.

In addition to these truly Late Bronze Age types, palstaves and rapiers seem to have persisted in the south-west in the early stage of LBA_2.

The Wilburton hoard also contained spearheads with lunate openings, and with hollow heads (Class VB). As previously detailed, the Scottish lunate spearheads are generally associated with objects typologically later than those of the Wilburton complex, such as Late Ewart swords at Denhead and Glen Clova, Angus, and Ballimore, Argyll, and seventh century bucket staple at Duddingston Loch, and so probably the type should be assigned to the succeeding LBA_3.

An important hoard in this regard is that from Highfield, Ross and Cromarty, where a lunate spearhead was associated with a Class V spearhead and socketed axes of varying types, both Irish and English. Possibly the hoard belongs to LBA_2, but in view of other Scottish associations for lunate spearheads, a later date is preferable. Nevertheless, the English axes in this hoard are not far removed from some in the Wilburton hoard itself, which themselves recall the Taunton axe of LBA_1.

The Highfield bag-shaped axe suggests a late dating for

the hoard, but the occurrence of a squat axe, probably of Scandinavian influence, at Callander, ?dated to the Glentrool phase, shows that the bag axe need not be assigned a terminus a quo of c.600 B.C.

The tongue-shaped chape too cannot be unquestionably assigned, to LBA_2 in view of its later associations with swan's-neck sunflower pins at Tarves and Grosvenor Crescent (fifth century), and Late Ewart swords at Cauldhame, although it clearly makes its appearance in this phase. The tubular ferrule is probably a long-lived type as well; one with splayed foot was found on the West of Scotland with fragments of two Class V spearheads, and may be as early as this LBA_2. The Thenford Hill, Cambs., hoard contains a similar splay-footed ferrule with Class V spearheads, and Ewart swords, but need not be as late in date as "from c.800 B.C." (Inv. Arch. GB 12). The possibility of some relationship between these splayed ferrules and flesh-forks should be noted again.

The hollow-head spears, Class VB, cannot be decisively assigned to LBA_2 in Scotland, as the associations recorded are suggestive of a later dating. The partially hollow-headed spear from Sleat, Skye, is dated to the seventh century, as are those from the Duddingston Loch hoard. Similar associations are recorded in Wales, where the hollow-bladed spearheads in the Guilsfield hoard are duplicated in the later hoard of Pant-y-Maen. The occurrence of Class VB spearheads in Scandinavia, dated to Montelius IV, should be noted (Broholm, 1949, 37; Sprockhoff, 1937, 24-25).

Some Class V spearheads clearly belong to Scottish LBA_2, but the lack of distinctive associations clearly dated to this phase does not permit any specific examples to be listed. The Murrayfield hoard

contained a Class V and a VB spearhead, but this may more reasonably be assigned to a time contemporary with the Sleat find. However, the point made that Ewart swords must be dated to this LBA_2 in Scotland, possibly the eighth century, enables a few objects to be specifically placed in this phase. The Kilconan, Kintyre, hoard contained Ewart swords as well as a large Class V spearhead and other swords which may show some very slight Wilburton influence in the butt, but which may e qually as well be considered as a Late Ewart type, and a tongue chape. A similar association of chape and Ewart sword occurred at Gogarburn, Midlothian, and these two finds confirm that the tongue chape lies principally in LBA_2.

Other finds with Ewart swords include Iochdar, South Uist, and Kelton, Kirkcudbright, the latter with a bronze ring such as commonly occurs with swords and must be connected with their mounting. Arthur's Seat, Edinburgh, also yielded two Ewart swords, and both Grosvenor Crescent and Duddingston Loch hoards contained the type, but with other later objects.

Beaten bronze shields have been discussed in detail in an earlier section, and the British evidence, based on the Langwood Fen find and upon the distributional contrast between shields and other beaten bronze work, namely buckets and cauldrons, suggests that the British types predate the seventh century, and therefore belong to this LBA_2. The continental evidence, based upon the Nipperwiese type and the boss-work style as seen on one of the Sorup shields, supports this conclusion; there is no evidence that points conclusively to a later dating for the British shields, and the tentative conclusion must be that these date to possibly the eighth or ninth centuries B.C. at Beith, Yetholm

and Achmaleddie.

Imports from the continent, or close copies thereof, found in Scotland, include the Carse Loch, Kirkcudbright, axe (NMA DE 5) which is dated in Scandinavia to Montelius IV, and therefore falls within this LBA_2 (Broholm 1949, pl. 5, 4; Broholm DO IV, fig. 22). This type may have been the inspiration for the Welsh ribbed axe, and, more indirectly, for the other British and Irish ribbed axes, which mainly fall within later periods, from c.700 B.C. However, some of these may have emerged before the end of LBA_2, as is suggested by the Grassieslack, Aberdeenshire, find, with a Ewart sword and faintly ribbed axe.

The ribbed unlooped palstave from Cairnleith, Angus, also suggests that the ribbing idea may have become widespread before the end of LBA_2. This ribbed type recalls the Nettleham palstaves, and with them the carp's tongue complex as defined by Clark (1940, 52-). But Nettleham is connected with Wilburton by their indented socketed axes, and so this Cairnleith palstave need not be considered as late as the seventh century B.C. The plain palstaves in the Guilsfield hoard are matched by one at Bishopsland, and at Wilburton itself, so that the persistence of palstaves well into LBA_2 of Scotland need cause no surprise.

A faceted socketed axe from Kish, Co. Wicklow (JRSAI, lxx, 1940, 94) was found with a Class IIIA spearhead and other objects. This association suggests that the faceted axe may have arrived in Britain and Ireland during this Wilburton phase, for although the spearhead is of the typologically late perforated base form, its survival into the early seventh century is somewhat doubtful. Other British and Irish associations and typology suggest that this socketed axe probably

succeeded the Taunton type, and its Continental analogies, as described previously, (e.g. Sprockhoff 1937, taf. 5, 17, p. 30) point to a date contemporary with Montelius IV, i.e., in LBA_2 of Scotland. Its persistence and influence in later times is not disputed (e.g. Castlehill, Angus, fifth century).

In Scotland, it is difficult to distinguish associated finds containing faceted socketed axes that may with confidence be assigned to LBA_2, as most hoards contain objects that point to a later time. Ballimore, Argyll, may fall within LBA_2, probably late within this phase, c.700, because of its faceted axe and lunate spearhead. However, the associations of bag axes and Late Ewart swords render this chronological placing somewhat doubtful, and it is probably better to consider the hoard as typical of LBA_3.

The probable founder's hoard from Islay may, however, be assigned to the earlier period with confidence. Here a faceted axe was found with an oval-sectioned axe of crude form, a Class IV spearhead more often seen in earlier contexts, a flanged adze and a halberd, all presumably collected as scrap. The faceted axe from Bowerhouses, East Lothian, was associated with three bifid razors which appear to have persisted throughout the LBA, so the hoard's assignation to LBA_2 is doubtful. The pottery from the find would probably solve the problem.

The great Gospertie, Fife, hoard contained a faceted axe, along with a looped palstave, and this suggests that the find may belong to LBA_2, although the possible association with an axe of English type tends to place this hoard in a slightly later chronological position, as does the Husaboat House, Skye, find, while Gillespie, Wigtownshire,

with three faceted axes, may belong to this or later phases.

Another socketed axe, from Forest of Birse, Aberdeenshire, (NMA DE 13), appears to be a copy of another of Scandinavian type, similarily dated to Montelius IV (Montelius 1922, 1054), although it persisted in a slightly changed form into later periods (e.g. Broholm, DO iv, fig. 217), and an axe from Perthshire (NMA DE 89) represents a local copying of this multiple moulding type. From Arthur's Seat, Edinburgh, (NMA DQ 89) a socketed axe with a different arrangement of multiple mouldings recalls a North German type (Sprockhoff 1941, taf. 38, 10) but its other British examples suggest a date later than LBA_2. (details listed in previous section).

A direct import from Scandinavia appears in the Dalduff, Ayrshire, hoard; this is a tanged sword which is commonly seen in hoards of Montelius IV in Northern Europe (Broholm, 1949, pl. 1, 3 and 3a; Sprockhoff, 1952a, map 3), although it does apparently extend into Montelius V. However the narrow rectangular-sectioned tang of Dalduff is only seen on the earlier form in Denmark. The associations at Dalduff include socketed axes and the staples of a Class A2 cauldron which dates the hoard to the mid-seventh century; the recent discovery of objects possibly part of this hoard, including axes with bronze dripping and a third large ring, as of a cauldron, supports the evidence that this is a founder's hoard, and so the tanged sword fragments must be considered as scrap, and the hoard does not belong to LBA_2. A similarly-shaped blade, but smaller, from Nordhouse, Shetland (NMA DO 6), presumably dates to LBA_2 because of its Montelius IV connections.

The Wilburton phase, LBA_2 in Scotland, is basically

important because it witnessed the arrival of truly Late Bronze Age influences, from the south and from the north-east. There is little evidence of contact from Ireland, unless the ribbon torcs be assigned to this period.

This situation agrees precisely with the suggested direction of Irish trade in the early part of the Late Bronze Age, mainly to the south of England (Hodges, 1956, 46-). Only in the seventh century did the Irish market shift from south to north, and so the evidence of Irish-Scottish connections in Scottish LBA 1 and 2 should be sparse.

South-east England probably played a considerable part in the diffusion of ideas throughout the country, primarily along the east coasts, in the early stage, while the later development of more northern types, e.g. Ewart swords, and shields, probably took place in north-eastern England if not a purely local process. Throughout this period, penetration of the country was not great, and probably many areas, particularly in the north and west, scarcely obtained any knowledge of the new types and techniques now available. Contact with northern Europe was limited, with only those direct imports described, but the arrival of these objects, few though they may have been, brought about the development of many of the types seen in abundance in the succeeding centuries. The Irish Sea may have been a collecting point for these Scandinavian contacts (Carse Loch axe, proto-Welsh ribbed axes), but the north-east Scottish finds point to some other contacts, foreshadowing the major incursion in the succeeding period.

LBA3 - Covesea:

The commencement of this third phase in the Scottish Late Bronze Age can be dated reliably to the decades around 700 B.C., but, as stated, the Wilburton or LBA2 phase with its developed native types continued alongside the Covesea objects in the north-east, and continued more or less undisturbed in other parts of the country.

In the south of England, the carp's tongue complex dominates finds of the seventh or sixth centuries B.C., with typical objects as carp's tongue swords, bag chapes, wing decorated socketed axes, end-winged axes and bugle-shaped mounts. None of these types have been found in Scotland. On the fringe of this area, ribbed palstaves, and bronze moulds for these, have been isolated by Clark (1940, 52-) and adjudged contemporary with the carp's tongue group. However, the Nettleham Lincs. hoard seems to contain objects from both Wilburton and carp's tongue contexts, and may be considered in two lights, demonstrating the survival of specialized Wilburton objects, such as indented axes, into the later phase, or demonstrating the appearance of the ribbed palstave earlier than generally considered.

If an origin for ribbed axes or palstaves is sought in Scandinavian Montelius IV ribbed axes, then this earlier dating for the type may well apply. Nevertheless, the majority of these ribbed palstaves, and their contemporary ribbed socketed axes, are dated to the carp's tongue period, mainly the seventh and sixth centuries B.C. The socketed axes occurring in carp's tongue hoards are of English type, that is, with rectangular section, slender, and with double moulding (e.g. Inv. Arch. GB 37, no. 23-31); these have been found in Montelius IV and V

contexts in Northern Europe (Broholm, 1946, M84; Sprockhoff, 1941, taf. 42, 10; La Baume, 1930-1, abb 26) and in Late Urnfields in Central Europe (Müller-Karpe, 1948, taf. 34, 4). In view of these associations, the type probably appeared in south-east England (Tackenberg, 1951, not north German) in the eighth century, although the carp's tongue complex is generally dated to the seventh and sixth centuries. Possibly the rectangular-sectioned axes in the Wilburton hoard, and elsewhere, occasioned the development of this type at a slightly earlier date.

Scottish hoards containing axes of this type are not particularly valuable. The associations include faceted axes at Arthur's Seat, Dalduff, Castlehill and Gospertie, and bag-shaped axes at Citadel Leith, Highfield, Dalduff and Castlehill. Dalduff is dated to the seventh century by its cauldron staples, but Castlehill is adjudged to be fifth century by its analogy with Traprain Law. The Highfield hoard contained a lunate spearhead which may belong to the Wilburton phase, more probably to LBA_3 in Scotland. A socketed axe of this type from Auchtertyre assures its dating to c.700 B.C., found with Type 2 and 2a armlets such as occurred at Gight. As these axes are concentrated in in the south-east, their main life appears to lie in the seventh and sixth centuries, with the carp's tongue complex, but in the north they persisted well into the last stages of the Late Bronze Age.

The major components of Scottish LBA_3 are those decorative objects which are restricted to the north-east, (map 25), and these, and their associations, form the Covesea phase which must be considered distinct from the gradual and general evolution of native bronzes which continued throughout the Late Bronze Age from their appearance in LBA_2.

The objects distinctive of the Covesea phase are found in a group of hoards distributed in north-east Scotland from the Dornoch Firth to the Tay. Their ethnological significance is discussed elsewhere.

The most important hoard in a chronological sense is that from the Braes of Gight, dated by its necklets to the decades about 700 B.C. The recognition of the specialized Type 2a armlets in this hoard decisively links Gight with the Covesea and Auchtertyre finds, and the distinctive Type 2 armlets at all these sites connect with hoards from Rehill, Balmashanner, Wester Ord, and three less important finds of gold armlets at Kirkhill, Ormidale and Alloa. The Wester Ord hoard contains Type 2 armlets and fragments of a necklet of Gight type. As previously stated, the necklets are dated c.700 B.C., and the armlets fall readily at this horizon.

The pottery from the Sculptor's Cave, Covesea, and from other sites in this north-eastern area has been discussed previously, and remains the most important element in the significant aspect of the Covesea invasion.

The Balmashanner hoard, with Type 2 armlets, also contains a cast bronze bowl (matched at Ardoe, Aberdeenshire) reliably dated to the Late Urnfield, by its analogies in the Middle Rhine area, and the iron ring from this hoard fits satisfactorily with the dating of the Covesea phase to the end of Hallstatt B or early in Hallstatt C, c.700 B.C. The incursion of the Covesea folk may best be explained as the result of the pressure imposed on the bronze economy of Late Urnfield times by the iron-users of Hallstatt C and the placing of the landings at Covesea c.700 B.C. lies at or near this point on the continent.

While not essentially of this Covesea phase, as it is

believed to be a native production, the curved socketed knife from Wester Ord provides a valuable chronological link with two native hoards, from Sleat and Cullerne, and these bring Late Ewart swords and hollow-headed spears at Sleat, and a Class II razor at Cullerne, into Scottish LBA3. In addition, a valuable cross-reference is provided by the cup-headed pin at Sleat which thereby links LBA3 with Montelius V and with Late Urnfield - Hallstatt C, suggesting a date not far from 700 B.C. Presumably the sunflower pins from Ireland fall into this chronological horizon, based on Montelius V analogies and associated Irish finds.

It should be noted that the Covesea phase, as evidenced by its exotic character, is a part of, yet distinct within, Scottish LBA3.

A second chronological horizon within LBA3 is provided by the rare buckets and cauldrons found in Scotland. Only two have occurred with other objects, but the associations are valuable. A bucket staple and ring from Duddingston Loch, a founder's hoard (but see Hawkes, 1957, 149) serves to date the hollow-headed spears, lunate and barbed lunate spears, as well as Ewart and Late Ewart swords, to the mid seventh century. The fragments of a Class A2 cauldron from Dalduff, another founder's hoard, were associated with various socketed axes and a Scandinavian sword of Montelius IV which must be an antique.

Turning again to the Covesea phase, various bronze and gold types may be dated to LBA3 by their association with distinctive bracelets or necklets. These include bifid razors, as at Gight, Thorndon knives from Wester Ord (and seen in Montelius V context at Böck), Type 2 gouges at the same site, socketed axes both faceted and bag-shaped as well as rectangular-sectioned from Rehill, Balmashanner, Auchtertyre and

Wester Ord, curved knives as stated, and varying gold objects which allow connections with Ireland to be ascertained. Covesea and Balmashanner both show false ring money which is accepted as of Irish influence if not direct exportation, and the latter hoard also contains gold triangular-sectioned ornaments, such as occur at Heathery Burn and in several Scottish hoards, all of which may be fairly confidently dated to the seventh or sixth centuries.

Gold dress fasteners and Type 3c ornaments are also linked to this period because of Scottish associations at Torloisk and Monzie, and at Whitefarland, with the triangular objects. Another cross-link is provided by the type at Dunbarts, where it occurred with a penannular bracelet of Type 1, other examples of which were found with Type 2 armlets at Alloa and other sites; this links the seventh century Covesea types with Irish-derived triangular ornaments and Type 1 armlets, although the last-named persisted into later periods, as at Traprain in bronze. All these gold ornaments are assigned to LBA$_3$ or later, as most have been found associated with each other, and with objects characteristic of this phase; Types 1 and 3c at Glen Aray, Types 1 and 2 at Alloa, Type 1 and triangular ornament at Dunbartonshire, the latter objects and Type 3c at Whitefarland, with dress fastener at Torloisk and Monzie, and with false ring money at Balmashanner. Bronze Type 2 armlets occurred with triangular ornaments at Balmashanner, and with false ring money at Covesea, and bronze Type 1 armlets with false ring money at the former site. There seems no reason to date these gold objects any earlier than the seventh century, but some may continue on well into the succeeding centuries, as Traprain Law and Lough Gara illustrate.

Probably most Thorndon and Dungiven knives belong to this LBA3, as the Wester Ord find suggests, and indeed the close resemblance between these and the curved knives bears this out. Bifid razors presumably persisted throughout the Late Bronze Age, and are represented in this phase by Gight, Cullerne and Quoykea. Most of the socketed gouges may be assigned to LBA3 as well, although later associations are recorded. One from Balnoon and another from Monmore clearly belong to this phase, as does the gouge from Wester Ord. A bag axe at Tynehead may date its associated gouge to this phase if not later, and the Achnahanaid hoard probably belongs here as well as that from Torran. But Adabrock and Traprain show later datings, and illustrate that the gouge continued in use until the end of the Bronze Age in Scotland.

The ribbed socketed axe, or Yorkshire axe, is probably contemporary with this horizon; its association with a Ewart sword at Grassieslack might suggest an earlier date, but at Horsehope however the axe is clearly Hallstatt C in date, possibly late seventh or sixth centuries B.C., and Traprain suggests an even later date for the type. At Dalduff the axe is seventh century, and the Poolewe hoard links an elaborate version of the type with a bronze Type 3c ornament, also of the seventh or sixth century, probably.

The ribbed palstave, considered contemporary with the Yorkshire and Welsh axes, is represented in Scotland only by a stray find, but some relationship exists between the Nottingham hoard, with a Class IV palstave, and the Monmore, Perthshire find. Both contained ribbed tanged knives and semi-tubular rings. Heathery Burn and Derryhale, Co. Armagh, link these knives with seventh century objects. The mount

is duplicated in the Balnoon and Inshoch hoards, the former with a socketed gouge and button of Reach Fen type, the latter limited to socketed axes and leaf-blade spearheads.

The Inshoch socketed axes include a bag axe, commonly believed to be Irish in inspiration, and to date only from the mid-seventh century. These axes are rare in the carp's tongue area, and suggest some contemporaneity with that complex. As described, they appear to be a native development of a Northern type, mainly dated to Montelius V - VI, but consideration must also be given to the general Irish tendency to reduction in reproduction, the overall smallness of most bronze forms in the Late Bronze Age, seen in axes, spearheads and swords. Association with lunate spearheads at Highfield and Ballimore suggests a date early in LBA_3 in Scotland for the bag axe appearance, and this fits in well with the proposed dating of Irish bag axes, in the seventh century. The English rectangular-sectioned axes at Highfield and the Citadel Leith suggest partial contemporaneity with the seventh and sixth century carp's tongue complex of the south. The semi-tubular mount at Inshoch confirms this dating, as described above, as do the cauldron staples from Dalduff. A bag axe at Castlehill however appears to lie closer to 500 B.C., as this hoard is linked typologically with Traprain Law. The atypical small squat axe from Callander?dates to LBA_1, and possibly may be an early attempt at reproduction of small Scandinavian axes of Montelius IV.

Other native objects that may be assigned to this LBA_3 include lunate spearheads, as seen in the Duddingston Loch hoard, and their associated Late Ewart swords. While the former type is considered to have originated in the Wilburton phase, no evidence in Scotland suggests that it occurred here before LBA_3. However, in the case of Late Ewart

swords, it is possible that these had descended from the Ewart type before 700 B.C., but as the distinctions between the two types are often faintly marked, it is impossible to assign the transformation to a fixed point. Nevertheless, associations for the Late Ewart sword generally are of LBA_3, and it is a convenient point to use as a rough guide. Ewart swords continued into LBA_3, but Late Ewarts hardly appear before this period. It depends to a considerable extent upon the native workmanship, and the fact that true Ewart swords appear in the Grosvenor Crescent hoard, with its swan's-neck pin of c.500 B.C., illustrates this well. Late Ewart swords appear in both the Tarves and Grosvenor Crescent hoards, c.500 B.C., but occur in seventh century contexts at Duddingston Loch and Sleat. The occurrence of lunate spearheads with these swords at Ballimore and Denhead points more to the survival of the spear form than to the early dating of the swords.

This lunate spear evidence, however, taken with the association of Late Ewart sword and tongue chape at Kilconan and Cauldhame, would point strongly to the assignation of the sword type to LBA_2, except for the Tarves find, where the tongue chape is dated securely to c.500 B.C. Late Ewart and Ewart swords have several times occurred together, at Rigg, Dunsinane and Jacksbank, and probably these hoards may be assigned to an early part of LBA_3.

Connections with Scandinavia are not particularly strong at this time, as many of the exotic objects arrive from more southerly points. Of exceptional interest is the fact that, while the amber trade appears to have continued, the Irish-Scandinavian pin types scarcely appear in Scotland. Balmashanner has yielded amber beads with other

objects suggestive of both Irish and North European connections, but as amber occurs in LBA_1 at Glentrool and LBA_4 at Adabrock and Orrock, no new contact can be argued. The close resemblance and obvious connection between Ireland and Scandinavia, seen in sunflower pins, emphasizes the absence of these pins from Scotland. Possibly the east coast was already in receipt of influences of Covesea type, from points south of Scandinavia, and this discouraged the Northern contacts, or perhaps the lure of Irish gold caused the Northern people to ignore Scotland completely in this trade and influence. It is perhaps significant in this regard that the only Irish-Scandinavian pin, a cup-headed tupe, found in Scotland is that from Sleat, Skye, possibly lying on the Ireland-North European route, although the identical spearheads at this site and at Cullerne, Morayshire, related to an Irish type, suggest that the Sleat hoard represents the products of an Irish smith, and is unconnected with the Scandinavian trade route. The curved knives and pin appear in Irish contexts, the former not known in Northern Europe.

A socketed axe from Arthur's Seat (NMA DQ 89) may be an import or a copy of a Scandinavian form dated to Montelius V, and possibly may be included here instead of in LBA_2 as described. The type occurs in Ireland as well. Of less importance to Scotland are wood and leather shields of Herzsprung style which may date to this period, found in Ireland, and also trumpets, whose connection with Scandinavia is disputed. Nevertheless the conical studs appear to be of Montelius V derivation, and possibly the Wigtownshire fragmentary trumpet belongs here.

Many objects, of bronze or gold, illustrate the close

relationship that must have existed between Ireland and Scotland at this time. These include bag axes, short swords, Type 1 and 3c gold objects as well as triangular-sectioned ornaments and dress fasteners, and illustrate the recent argument that in the middle of the Irish Late Bronze Age the emphasis shifted from trade with the Lowland Zone to trade with the Highland Zone (Hodges, 1956, 48; Savory, 1958, 36). The carp's tongue hoards from southern England are considered to represent scrap collections from coastal France, and the Irish market of necessity had to look elsewhere. The great expansion in bronze-working appears to have led to the establishment of provincial industries or more probably areas of preference wherein certain types were favoured. Examples of this, on a larger scale, include the south-eastern English Wilburton area of LBA_2, the carp's tongue complex even more rigidly restricted to the south-east in LBA_3 (production centre probably in coastal France), and the south Welsh and Yorkshire schools of ribbed axes in LBA_3.

In Scotland, several industrial provinces may be discerned in LBA_3, (by this we mean either local production or local preference for exotic types) the most important being the Covesea area of course. This is restricted to the north-east, from the Dornoch Firth to the Tay. Copies of the distinctive bracelets occur in gold in the south, as befits the area of influence of Irish gold. Other gold forms, such as Type 3c and triangular-sectioned ornaments, are also limited to a great degree to this southern area. The limit beyond which Irish gold rarely penetrated lies somewhere near the Tay, north of which bronze copies were produced. This is shown well by Type 1 bracelets, copies of which in both gold and bronze are common in Scotland; the gold objects are

found principally in the west and south of the country, some in the central area, while bronze representations are distributed mainly in the north and east, none in the south-west.

Socketed axes are more readily divisible into separate types, and Savory has shown a specialized production in west Wales (1958, 40, fig. 2, no. 7). In Scotland, a form ultimately derived from a North European type can be isolated in the south-west, and clearly must have its origin in Irish axes as close to the prototype (Sprockhoff, 1941, taf. 38, 10, map abb 67). The Irish axes are restricted to the north-east, from Dungiven Co Derry (ibid abb 68), Cromaghs, Co. Antrim (PRIA, 26c, 1916, 119-), Belfast (Arch. 61, 1908, 153-), with a further example from Ballinderry, Co. Westmeath (JRSAI, 83, 1953, 103-), and provide associations with sunflower pins and dress fasteners. The Scottish axes of this type from Muirhead and Low Overmoor, Ayrshire, (NMA DE 113 and Kilmarnock Museum), from Islay (NMA DE 119), and an atypical specimen from Old Monkland, Lanarkshire (NMA DE 87) all show the multiple mouldings of unequal width that characterize the Irish adoption of the Northern form. An axe from Roskhill, Skye (NMA DE 99), may belong to this group, although it is somewhat atypical.

A second provincial group of socketed axes lies in the north-east of Scotland and may be related to or influenced by Scandinavian multi-moulded axes which date from Montelius IV to VI (Montelius, 1922, 1054; Broholm, DO iv, fig. 217; Broholm, 1949, 249), copies of which appear in Scotland at Birse, Aberdeenshire (NMA DE 13), and from Perthshire (NMA DE 89). The group of socketed axes considered here are not conclusively derived from this type, but by their multiple mouldings,

of equal width, they appear to have some connection. Five axes in this style have been found in Aberdeenshire, (Old Meldrum, Aberdeen Museum, 52.10.1; Alford NMA DE 58; Aberdeenshire, Marischal College, 247.5; Aberdeenshire, Marischal College, 247.2; prob. Aberdeenshire Marischal College 255), one in Nairn at Inshoch (NMA DQ 76) dated to LBA3 by associations, and two from eastern Ross and Cromarty (Conon Mains, NMA DE 62 and atypical Highfield, NMA DQ 84). South of the Aberdeenshire centre, an axe from Monikie, Angus (BM WG 1980) and two from Perthshire (Doune, Hunterian Museum, B1914.287, Murray Asylum, Perth Museum, 131) appear to be of this type; two axes from Lanarkshire (Carnwath, Kelvingrove Museum, 19733, and NMA DE 30) are the only finds of this form out of the main area of concentration. Another axe from Perthshire (Perth Museum 130) may be considered as showing some typological relationship with this group.

Spearheads exhibit the same local specialization, but it is only in the more elaborate types that this is discernible. A Class VA spearhead from Auchtertyre, Morayshire (NMA DQ 106) is closely matched by the Gathercauld, Fife, find (NMA DG 94), and less closely by one from Perthshire (Kelvingrove, Museum, 96). Lunate spearheads, found mainly in central Scotland, exhibit a local type as seen in the Glen Clova find (NMA), one with perforations and one without, and at Crieff, Perthshire (Perth Museum), two others probably from Perthshire and Stirlingshire (NMA and Smith Institute), and one from the Teith (Smith Institute). Of Class V spearheads, that some common source of supply existed over wide areas is proved by the Sleat and Cullerne hoards; these are linked by their identical spearheads, and very similar curved

knives. The occurrence of similar spearheads in Ireland has been noted previously and the appearance of a cup-headed pin, unique in Scotland, in the Sleat hoard shows the Irish nature of these hoards. None of the objects in the Sleat hoard have been used, and remain practically as they have emerged from the mould, so that it remains a possibility that an Irish smith produced these locally on the island. The suggestion of an Irish home for these objects is however more strongly advanced.

The other spearhead from Cullerne is of the same general style, with narrow blade and large socket, and resembles to a certain extent a spearhead from the Highfield hoard, from the same northern area. The two spearheads from Sleat, one of Class V and one of VB, are matched at Murrayfield with larger spears yet one of each type. Further relations between north and central Scotland appear in the similar spearheads from Inshoch, Nairn, and Monmore, Perthshire. These two hoards are already connected by their common semi-tubular mounts, dated to the seventh century or slightly later, and their spearheads repeat this similarity. (NMA DQ 74 and DQ 50). The blade form of these spears differs from that seen on a spearhead from Heathery Haugh, Kincardineshire, and from Torran, Argyll (Montrose Museum and NMA DQ 116) which expand rapidly from blade base, and this slight evidence of east-west influence is repeated in the composition of the hoards from Cauldhame, Angus, and Kilconan, Argyll; each of these hoards contained one large Class V spearhead, one tongue chape, and several swords of native type, and suggest common ideas in the make-up of presumably a trader's hoard. As the types appear to be practically identical, it is possible that they originated in a common source.

LBA4 - Hallstatt:

Following the arrival of the Covesea folk in the years around 700 B.C., with their distinctive objects of late Urnfield type, a further period in the Late Bronze Age of Scotland may be distinguished by the appearance in varying contexts of Hallstatt C objects. These, however, nowhere resemble in importance the Covesea types, which are taken to represent the incursion of a group of settlers as previously detailed. In all probability, the examples of Hallstatt-derived types merely represent occasional trading expeditions or individual settlers, although the evidence from Horsehope suggests that something of more substance than trade alone appeared in parts of Scotland. Throughout this period, LBA4, the native types of implements and weapons continued to be manufactured and employed, and little change is perceptible in the evolution of the common types.

On the Continent, the beginning of Hallstatt C in western Europe is placed c.700 B.C., that of Northern Montelius VI shortly after, but it is generally accepted that the influence of Hallstatt C hardly penetrated to the British Isles before the mid-seventh century. The commencement of LBA4 in Scotland is taken to lie in the decades before 600 B.C.

The distribution of those objects known to belong to LBA4 is distinctly eastern (Map 26), centred around the Forth and Tay. In this no influence from Ireland is apparent, and clearly eastern England must have played a considerable part in the diffusion of some of the objects to Scotland. Others, however, are unrepresented in the south and must have arrived direct from the Continent, either the objects them-

selves or sufficient influence to allow local reproduction.

The sword types represented in LBA4 include native Late Ewarts, swords with bronze pommels, and Hallstatt bronze swords. The native type continued to be produced, and clay moulds for their manufacture have been recovered from both Traprain Law and Jarlshof. Finer examples of the type, as at Grosvenor Crescent, show that the general process of devolution had its exceptions. Native swords occur at Tarves and Grosvenor Crescent, and tongue chape at the former, showing its survival from the Wilburton phase or LBA2. At both these sites, swords with bronze pommels were found, and their association with swan's-neck sunflower pins point to a date probably in the fifth century for their production.

Other swords of this type have not been found in association, but the only two LBA finds from Loch Broom are a pin and a sword of these types, and while no association can be adduced, the suggestion must be that some chronological connection exists, and it seems correct to place all the Scottish swords with bronze pommels in LBA4. The occurrence of a number of swords of this type from north-east England has been noted. Savory suggests that the true Hallstatt C bronze swords may have contributed to the development of the Ewart type, but associations illustrate that the Ewart and Late Ewart swords had more or less completed their evolutionary processes by the time the British Hallstatt sword had developed.

A British sword of late type was found at Kirksoby, Denmark, in a Montelius V context, and reflects Hallstatt C influence on a Late Ewart form (Cowen, 1952, 129 ff). However, while this

illustrates the overlap of Hallstatt C and Montelius V, the associated spearhead has been considered as of Hallstatt B type (Vogt, 1942), and this presents the problem that Hallstatt B and C overlap, not generally accepted. Probably the attribution of the spearhead to Hallstatt B is erroneous. Two Late Ewart swords from the east coast, however, show some influence of Hallstatt character in their butts.

Socketed axes and Class V spearheads continued in use during LBA$_4$, with little change in their form. The bag-shaped axe possibly was the most common form, although ribbed and faceted axes are known from Traprain, and rectangular-sectioned axes from Castlehill, Angus. A multi-faceted axe at Traprain (1922.231, Ha 6 - T.1 C) is more or less duplicated at Castlehill (NMA DQ 79) and suggests contemporaneity of these sites, and another from Traprain (1922.232 Ha 6 - T.2 C) matches one from Orkney (Hunterian Museum, A94). Ribbed axes of Yorkshire type are known from Horsehope as well as Traprain, and faceted axes, which appeared at an early stage in the Scottish Late Bronze Age, occur at these two sites and Adabrock. A socketed loopless axe probably from Angus (Montrose Museum) appears to represent an import from the North, of Montelius VI date (Aberg, 1936, taf x, 115; Sprockhoff, 1931, taf. 23, 4).

The occurrence of Class III razors at Traprain and Kinleith, both in the Lothians, should also be noted (C.M. Piggott, 1946, 128). The latter form seems to be unrepresented on the Continent, but its evolved openwork suggests relationship with Continental Hallstatt types. The Traprain razor is matched by one from the Thames (BM, 1953, fig. 11, no. 13) and from Old England, Brentford (Wheeler, 1929, pl. 1,

fig. 2, no. 3 and 7). Scandinavian examples are known (Montelius, 1912, fig. 637), as well as French (Breuil, 1901, 289, fig. 3, no. 31; Henry, 1933, 52, fig. 16, no. 3).

As stated, Scottish LBA_4 dates from the late seventh century, and two important hoards probably belong to a time not far removed from 600 B.C. The hoard from Adabrock, Lewis, is dated by its fragmentary cross-handled bronze bowl of type B2b to Hallstatt C (von Merhart, 1952, and as previously described). The other members of this hoard include faceted and rectangular-sectioned axes and a small Class V spearhead, and various craftsman's tools such as shouldered chisel, socketed hammer and gouge, and whetstones. Of different function are three bifid razors and several decorative objects.

The amber beads are probably of North European derivation (MacWhite, 1944a), as the beaten bowl has previously suggested. The glass bead is not blue-and-white, as Hawkes maintains (1957, 190, based on Childe, 1935) but is blue with a surface mottled by irregularly spaced whitish spots caused by bruising, the whiteness due to the many fissures containing occluded air. (Stone, 1952). Similar blue glass beads are known in continental contexts at an early date in the Bronze Age, and the Adabrock bead must date by its associations. (e.g. PZ xxv, 1934, 144; Brondsted, 1939, 118).

The double conical gold bead is not commonly seen, but presumably may show some connection with Irish gold, as identical beads are known from Ireland (Dublin Museum, 1885.175-184), but also from Chesterhope Common, Northumberland (Cat. Ant. Alnwick, 1880, 3).

The faceted axe from Adabrock is matched in the Horsehope

Peebles, hoard, which has been fully discussed by Piggott (1953) and dated to Hallstatt C on the basis of comparisons with Central European cart-burials of Hallstatt age. The ribbed axe in this hoard is clearly of Yorkshire type, and the faceted axe is probably also of east English type. Thus the associations suggest that the Horsehope gear may be derived from eastern England, and this appears to be the case, as comparisons with other hoards show. Cast bronze nave bands from a cart, and perforated and looped discs of horse harness were found at Heathery Burn with ribbed axes, (Hawkes, 1957, 153-), and these discs also occurred at Parc-y-Meirch, Denbigh (Arch. Camb. XCVI, i, 1941) along with jangles of Scandinavian inspiration in Montelius V (PPS, 1958, 221 ff), possibly late enough to be contemporary with Hallstatt C.

The Horsehope gear clearly is of Hallstatt C date, although Hawkes states that it need not be as late as this (1957, 154, 159). Welby, Leicester (Powell, 1950; Inv. Arch. GB 24) also belongs to this group of horse and cart objects, with similar discs and a probably late Urnfield cross-handled bowl.

The single-looped "buttons" at Heathery Burn, and at Reach Fen (Inv. Arch. GB 17), Llangwyllog, Anglesea (Savory, 1958, 41) and Kensington (PSA, 2nd series, iii, 232) are considered as possible components of harness gear, as several occurred in the Parc-y-Meirch hoard. A corrugated bronze disc with two loops from Fortrie, Banffshire (NMA DQ 99) may also be regarded in this connection, and the double-looped "mount" from the Grosvenor Crescent hoard should not be ignored, although this latter object lacks close analogies in these hoards. The associations at Fortrie include a semi-tubular ring of the same type as

occurs in the Monmore and Nottinghamshire hoards, where a seventh century date, LBA3, is suggested. The Fortrie ring is smaller but may be dated to a time contemporary with Heathery Burn, Parc-y-Meirch and Horsehope, ranging from mid-seventh to early sixth century. Heathery Burn and Welby contain no objects clearly Hallstatt C, but Horsehope and Llyn Fawr, and possibly Parc-y-Meirch are of this period (Hawkes, 1957).

While Adabrock and Horsehope hoards, and individual finds of Hallstatt C objects, probably fall within the late seventh or sixth centuries, the group of swan's-neck sunflower pins previously described can hardly be earlier than the mid-sixth century, and probably date from c.500 B.C. Their distribution is eastern, in the main, and provide evidence of further influences from north-west Europe in Hallstatt times. Associated finds at Tarves, Grosvenor Crescent and Orrock illustrate the persistence of native traditions in Scotland. Ewart and Late Ewart swords show little change from their predecessors of LBA2 and 3, and the tongue chape at Tarves is a further example of survival without modification. The bronze pommel swords have previously been mentioned. At Grosvenor Crescent, the looped mount is presumably a belt mounting, as its connections with horse gear are not documented. The Grosvenor hoard is clearly a merchant's hoard, with the mount and pin as personal objects, also the socketed axe (if a part of the hoard), while all, or most, of the swords are stock. The large size and fine quality of these swords illustrate that individual variations in bronze-working must have been great.

At Orrock, Fife, the important objects of the hoard or

grave group (C.M. Piggott, 1948), in addition to the swan's-neck pin, are penannular armlets of Type 1 and perforated rings. The former are thus shown to exhibit a life of considerable length in Late Bronze Age Scotland, and the latter connect remotely with a ring in the Poolewe hoard in Ross and Cromarty. The perforations in all instances are rectangular, and placed on the side of the ring, not the outer edge. The differences in size of these rings, smaller at Orrock, may however render this comparison valueless. All the three armlets were broken when found, as was an amber bead.

The Late Bronze Age settlements of Traprain Law and Jarlshof have previously been described, and evidence advanced to show that they date probably no earlier than 500 B.C. At Traprain, the LBA settlement is considered to have survived until the late second or first century B.C., when the pre-Roman "Iron Age" replaced or added to the existing purely Late Bronze Age industry. Some of these iron objects, such as the shaft-hole axehead, are matched by the objects appearing in the second LBA level at Lough Gara, but are somewhat peculiar in form and otherwise unduplicated.

The girdle-rings at Traprain and Lough Gara, in bronze, are seen only at these two sites. The pottery from both sites has been discussed elsewhere, but is clearly not related to Covesea-ware, and little connection between the two sites can be ascertained. Not far south of Traprain, however, the recently-excavated camp of Staple Howe, Yorkshire, has yielded pottery similar to that from Fengate, Peterborough, clearly Iron Age and distinctly not Late Bronze Age in form, rather connecting with the All Cannings Cross group, with comparatively fine

ware with carinated shoulders. Associated objects at Staple Howe are Hallstatt C razors and a shouldered and tanged chisel. Now Traprain also yielded a razor of thia Class III, although of different form, and the Lough Gara finds included a similar chisel. At Fengate an important association was a swan's-neck sunflower pin dated probably to the years c.500 B.C.

Staple Howe probably dates to c.600 B.C., which is only slightly after the arrival of Hallstatt C influence in Britain and the true Iron Age A. At Lough Gara, the two LBA levels are not believed to be separated by any appreciable length of time, and the comparable objects in the levels support this statigraphical conclusion. The bronze and gold work in both levels would normally be dated from c.700 B.C., and Raftery suggests c.600 B.C. as most likely. But we have seen that the pottery from here is closely linked with that from Knocknalappa and Ballinderry; Knocknalappa was dated to c. fifth century in the original report, and there seems to be little evidence to redate this any earlier.

And now the iron objects from Lough Gara support this late date, if as believed, they are truly associated with the second Late Bronze Age occupation level. The precise manner in which these iron objects occurred at Lough Gara is unknown, but it is surely much more plausible to consider them as of a date somewhat later than the arrival of the true Iron Age in Britain, in the sixth century B.C. It seems unlikely that Lough Gara, and therefore Traprain, are earlier than the fifth century in view of pottery and associated bronze and iron objects.

The settlement at Jarlshof, Shetland, has been fully described in a previous section, based on Hamilton (1956), and there

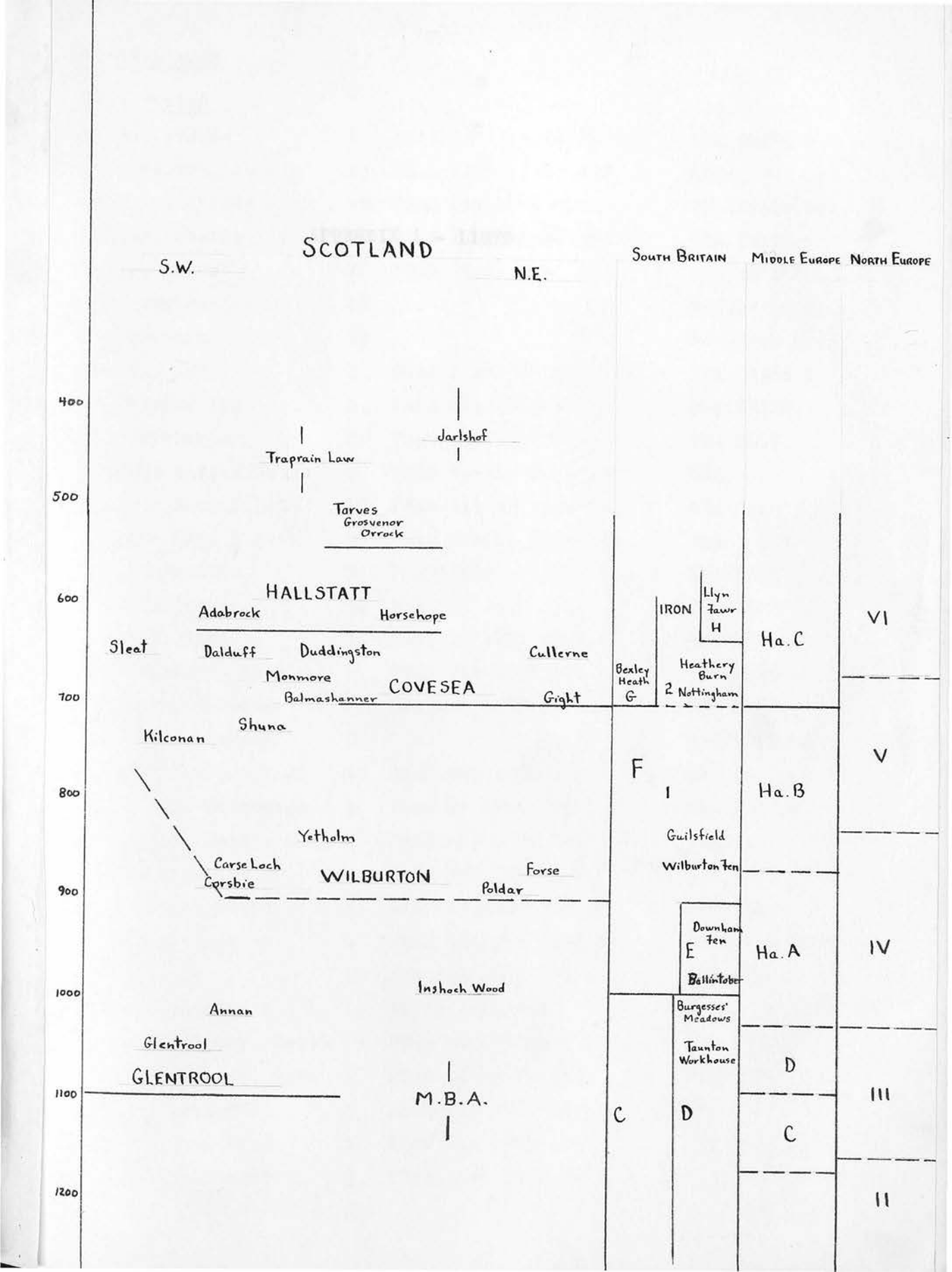
dated from c.500 B.C., although a slightly earlier date is equally tenable. The occurrence of clay moulds for Ewart swords, and sunflower pins, suggests a date within Scottish LBA3 or later; this would fit well with the diversion of Irish influence and trade to the north during Scandinavian Montelius V. The amount of time-lag, if any, is difficult to determine, and the pottery of Village I is scarcely of value in this connection.

The constructional features of the village, and the heavy industrial equipment, have, as stated, shown some similarities with the Calf of Eday wheel-house, and suggest that Jarlshof Village I should be dated somewhat later than LBA3; a date in the fifth century B.C. is suggested, in view of the clay mould forms, although a later date is equally tenable.

The second village reveals pottery that clearly shows Iron Age influence, and the fragment of clay mould found here is believed to have found its way into this deposit through the levelling of Village I by these settlers. The differences in material culture, both implements and house forms, supports the suggestion advanced by the pottery, that little connection between the inhabitants of Villages I and II existed. The pottery from the second village shows Iron Age influences, and a fragment of iron slag also suggests that Village II is better considered as Iron Age. Its date is believed to lie in the closing centuries B.C.

ADDENDUM

Since this study was completed, the first information (as yet unpublished) of the results of metallurgical analyses of Middle and Late Bronze Age bronzes has been obtained. This shows in detail that bronzes of the Somerset hoards, the Ornament horizon of M. Smith, the TBB group of J. Butler, belong to Group I which is otherwise made up of objects generally assigned to the Middle Bronze Age (see p.182). The Scottish Glentrool phase presumably also belongs to Group I and is therefore technically Middle Bronze Age. The evidence assembled in this study shows that objects like rapiers, some palstaves and some forms of looped spearheads, such as occur in the Glentrool hoard, appear to have persisted well into the Late Bronze Age in some local areas. In addition to this, the recent discussions of Welsh and Irish material has prompted some authorities to assign their equivalent phases to the Late Bronze Age (Welsh LBA_1, Savory 1958 16, 22; Irish LBA A(I), Hodges 1956 45-46). In view of this, the Glentrool phase in Scotland has here been termed LBA_1 (p.306) although this has ignored the technological evidence, not available at the time of writing. However, the absolute dating of Glentrool is not in doubt, and this question of numbering is not unduly important. The phase names are much to be preferred. The chronological table does not distinguish by numbers the phases of the Scottish Late Bronze Age, although in view of the continued existence of some 'early' objects well into the first millenium, possibly the decision to call the Glentrool phase LBA_1 is justified.


SCOTLAND
S.W.
N.E.
SOUTH BRITAIN
MIDDLE EUROPE
NORTH EUROPE
400
500
600
700
800
900
1000
1100
1200
Jarlshof
Traprain Law
Tarves
Grosvenor
Orrock
HALLSTATT
Adabrock
Horsehope
Sleat
Dalduff
Duddingston
Cullerne
Monmore
COVESEA
Balmashanner
Gight
Shuna
Kilconan
Yetholm
Carse Loch
Corsbie
WILBURTON
Forse
Poldar
Inshoch Wood
Annan
Glentrool
GLENTROOL
M.B.A.
IRON
Llyn Fawr H
Bexley Heath G
Heathery Burn
2 Nottingham
F
I
Guilsfield
Wilburton Fen
Downham Fen
E
Bellintober
Burgesses' Meadows
Taunton Workhouse
C
D
Ha.C
Ha.B
Ha.A
D
C
VI
V
IV
III
II

APPENDIX i - LISTS

SOCKETED AXES

three-ribbed

Alford, Aberds	2	PSAS lxxii 1938 69	NMA DE109 h
Grassieslack, Aberds	43	PSAS xlvii 1913 450	
Pitcaple, Aberds	16	PSAS lix 1925 210	?Pitcaple Cas.
Premnay, Aberds	19	PSAS lxxii 1938 69	NMA DE111
Airlie, Angus	1	PSAS lxxii 1938 69	NMA DE 108
prob. Angus	16		Meffan Inst
Dalduff, Ayr	10		Ferguson h
Dalduff, Ayr	4	PSAS xix 1885 315	NMA DQ98A h
nr Maybole, Ayr	6	PSAS xiv 1880 97	NMA DE122
Croy, Dunbarts	1	PSAS xxv 1891 8	NMA DE57
Traprain Law, E.Loth	6	PSAS lxxxix 1956 145	NMA
Traprain Law, E.Loth	10	Psas lxxxix 1956 145	NMA
Traprain Law, E.Loth	11	PSAS lxxxix 1956 145	NMA
Eigg, Inverness	5	PSAS lxxii 1938 165	NMA BN50
Skye, Inverness	12	NMA Cat 1892 134	NMA DE39
Hallhill, Kinc	2	PSAS ii 1857 63	NMA DE6
prob. Raemoir, Kinc	5	PSAS lvi 1922 17	NMA DE85
Kilnotrie, Kirkcud	2	NMA Cat 1892 132	NMA DE3
nr Glasgow, Lanark	2		Kelvingrove
?Lanarks	13	PSAS xvi 1882 145	NMA DE31
Bells Mill, Edinburgh	3	PSAS vi 1866 275	NMA DE17 h
nr Citadel, Leith, Midl	8	PSAS xii 1878 209	NMA DE9
Aikbrae, Peebles	1	PSAS xvi 1882 145	NMA DE25
Darnel Moss, Peebles	2	NMA Cat 1892 132	NMA DE1
Horsehope, Peebles	4	PSAS lxxxvii 1953 175	Chambers Inst h
Peeblesshire	10	NMA Cat 1892 133	NMA DE4
Lundie Farm, Perth	11	Smith Inst Cat	Smith Inst AK1 ?h
Teith, Callander, Perth	19	PSAS lxviii 1934 191	NMA DE101
Cauldshiels Loch, Roxb	1	PSAS li 1917 198	NMA DE76
Eildon Hills, Roxb	4	PSAS lix 1925 14	NMA DQ273 h
Eildon Hills, Roxb	5	PSAS lix 1925 14	NMA DQ274 h
nr Kalemouth, Roxb	8	PSAS lxvi 1932 422	NMA DQ286 h
"	9	"	NMA DQ287 h

nr Kalemouth, Roxb	10	PSAS lxvi 1932 422	NMA DQ288 h
"	11	"	NMA DQ289 h
"	12	"	NMA DQ290 h
"	15	"	NMA DQ291 h
"	21	"	NMA DQ297 h
"	13	"	NMA DQ298 cast h
"	14	"	NMA DQ299 cast h
Southdean, Roxb	28	PSAS xxii 1888 381	formerly Jedburgh
Essenside, Selkirk	8		formerly Pratt h
Howford, Selkirk	11	Berw N.C.x 1882-84 593-6	
?Stirlingshire	4		Smith Inst AK9
Genoch, Inch, Wigt	2	PSAS xxxv 1901 12	NMA DE63
Kirkland, Wigt	9	PSAS xvi 1882 11	NMA DE22
Lagganmore, Wigt	11	PSAS xxxv 1901 12	NMA DE64
Borders	5	PSAS lxix 1935 439	NMA DE107
Scotland		NMA Cat 1892 134	NMA DE45
more than three ribs			
Inverurie, Aberds	11		BM 58.7-7.1
St Fergus, Aberds	13	PSAS xxii 1888 366	Arbuthnot Mus
prob Islay, Argyll	16	PSAS lxxxiv 1950 228	NMA DE120
Southend, Argyll	20	PSAS iv 1862 396	NMA DE8 h
Auchencairn, Dumfries	6	PSAS xxii 1888 376	Thornhill 6
Stobshiel, E.Lothian	5	PSAS xvi 1882 476	NMA DE82
Kincardineshire	6	NMA Cat 1892 133	NMA DE15
Elvan Water, Lanarks.	23		Dalziel Coll.
Hangingshaw, Lanarks	5	PSAS iv 1862 396	NMA DE23
Water of Leith, Midloth	18	PSAS lxxviii 1944 141	NMA DE116
?Perthshire	24		NMA loan
Scotland		NMA Cat 1892 134	NMA DE42
with bar/pellet/ring decoration			
Aberdeenshire	32	Sibbald	
Criche, Angus	9		BM 91.41-18.3
Corsbie, Berwicks	1	PSAS lv 1921 17	NMA DE81
nr Tillicoultry, Clack	2	PSAS iv 1862 382	
Annan, Dumfries	1		Dumfries Mus 53
Coulter, Lanarks	20		R. Scot.Mus

nr Glasgow, Lanarks	4		formerly Kelvin
Holytown, Lanarks	6	PRIA xlii 160	Hunterian
Lesmahagow, Lanarks.	22		Grossart Coll.
Lanarkshire	10		formerly D.Ranken
?Lanarks	14	PSAS xvi 1882 145	NMA DE24
Fala, Midloth	13	PSAS xxii 1888 337	Chambers Inst
Falcon Ave, Edinburgh	14		NMA DE121
?Perthshire	25		NMA loan
prob. Perthshire	28	PSAS xxii 1888 338	Perth Mus 133
Cardonald, Renfrew	1		Kirkcud.Mus 2390
Poolewe, Ross	9	Dixon 1886 103	NMA loan h
Tarradale, Ross	13	PSAS xxxii 1898 7	NMA DE61
Knockandmaize, Wigt	10	PSAS xiv 1880 112,135	Earl of Stair
Borders	2	PSAS lxix 1935 439	NMA DE104
collared and faceted			
Loch Drum, Aberds	41	NMA Cat 1892 134	NMA DE37
Rehill Farm, Aberds	20	PSAS i 1854 138	NMA DQ72 h
Carlogie, Angus	4		Brechin Mus
Hatton, Angus	11	PSAS xliv 1910 331	NMA DE73
Ballimore, Argyll	9	PSAS lxxvii 1943 184	MacRae h
Barr Mor, Lismore, Arg.	10	PSAS lxxxvi 1952 210	NMA DE123
nr Tomintoul, Banffs	3		Banff Mus
nr Annan, Dumfries	3	PSAS lv 1921 11	NMA DE78
Bowerhouses, E.Loth	1	PSAS vi 1866 357	NMA DQ69 h
North Berwick Law, E.Loth	3	PSAS xxii 1888 33	NMA DE46
Traprain Law, E.Loth	12	PSAS lxxxviii 1956 238	NMA
Craighead Farm, Fife	1	PSAS lxv 1931 257	NMA DE98
Gospertie, Fife	2	Small 1823	h
prob. Fife	16	PSAS xxii 1888 346	St.Andrews Mus
Achnahanaid, Skye, Inv.	1	Ant.J.xxxl 1951 72	Univ.Mus.Camb.h
?Lanarks	19	PSAS xvi 1882 145	NMA DE26
Grahams Mount, Midloth	15	Arch.Scot iii iii ii 97	NMA DE10
Cullerne, Morays	4	PSAS liv 1920 124	NMA DQ234 h
Horsehope, Peebles	3	PSAS lxxxvii 1953 175	NMA DE60 h
St.Martins, Perth	13	PSAS x 1874 401	NMA DE34
Monmore, Perths	14	PSAS xvi 1882 27	NMA DQ51 h

Monmore, Perths	15	PSAS xvi 1882 27	NMA DQ52 h
Tay at Delvine, Perths	18	PSAS lxxii 1938 167	Perth Mus 132
Thistle Bridge, Perths	22		Perth Mus 129
Abbotsford, Roxb	24	PSAS lxix 1935 439	NMA DE102
nr Kalemouth, Roxb	16	PSAS lxvi 1932 422	NMA DQ292 h
"	17	"	NMA DQ293 h
"	18	"	NMA DQ294 h
"	19	"	NMA DQ295 h
"	20	"	NMA DQ296 h
Ladyrigg, Roxb	22		NMA DE74
Essenside, Selkirk	9		NMA (Douglas)
Essenside, Selkirk	6	Berw N.C.xi 1885-86 492	h
Gillespie, Wigt	3	PSAS xlv 1911 418	NMA DQ228 h
"	4	"	NMA DQ229 h
"	5	"	NMA DQ230 h
Whithorn, Wigt	16	PSAS xxiii 1889 150	NMA DE47
faceted			
Drumoak, Aberds	14	Glasgow Cat 1911 857	Marischal 247.10
Castlehill, Angus	5	PSAS ii 1857 65	NMA DQ79 h
Forfar, Angus	10	PSAS xxiii 1889 15	NMA DQ129 h
Monikie, Angus	13		BM WG1980
Achnacree, Argyll	1	PSAS x 1874 83,458	NMA DE11
Islay, Argyll	13	PSAS xvi 1882 409	NMA DQ47 h
Loch Arachaid, Argyll	17	PSAS lxii 1928 18	NMA DE97
Dalduff, Ayr	3	Ayr & Wigt Coll iv 50	NMA DQ94 h
Traprain Law, E.Loth	7	PSAS lxxxix 1956 145	NMA
"	8	"	NMA
"	9	"	NMA
nr Husabost, Skye, Inv	6	PSAS lxvii 1933 312	NMA DQ301 h
Bells Mill, Edinburgh	4	PSAS vi 1866 275	NMA DE18 h
"	5	"	NMA DE19 h
Inshoch, Nairn	3	PSAS xvi 1882 31	NMA DQ77 h
Orkney	1		Hunterian
West Linton, Peebles	9	PSAS lxxxviii 1956 241	NMA DE125
Balnabrock, Perths	2	PSAS xliv 1910 331	NMA DE72

prob. Perthshire	29	Psas xxii 1888 338	Perth Mus
Adabrock, Lewis, Ross	1	PSAS xlv 1911 27	NMA DQ211 h
Wester Ord, Ross	15	PSAS viii 1870 309	NMA DQ267 h
Golspie, Sutherland	2	Glasgow Cat 1911 857	Dunrobin
Penninghame, Wigt	14	Ayr & Gall Coll vii 27	NMA DE49
nr Stranraer, Wigt	15	Ayr & Wigt Coll ii 10	
<u>double moulding and sub-rectangular section</u>			
prob. Aberds	35		Marischal
Castlehill, Angus	6	PSAS ii 1857 65	NMA DQ80 h
Dalduff, Ayr	12		Ferguson h
"	13		Ferguson h
"	14		Ferguson h
Ayrshire	9	PSAS xxii 1888 376	Thornhill Mus 5
prob. Dumfries	9		Annan Mus
Gospertie, Fife	3	Small 1823	NMA DE33 h
Wester Golcantry, Inv	14	PSAS lxxiv 1940 149	NMA DE115 h
Arthurs Seat, Edinburgh	2	PSAS v 1864 126	NMA DE16 h
nr Citadel, Leith, Midl	9	PSAS vi 1866 313	NMA DE35 h
Auchtertyre, Moray	2	PSAS ix 1872 435	NMA DQ108 h
Cronan, Perths	34	PSAS lxxii 1938 167	NMA L1926.12
Dunblane, Perths	10		Marischal 247.4
Highfield, Ross	4	PSAS ii 1857 153	NMA DQ83 h
Derry, Wigt	1	PSAS xxiii 1889 150	NMA DE50
Borders	4	PSAS lxix 1935 439	NMA DE106
<u>sub-rectangular section</u>			
Fyvie, Aberds	8		Marischal 247.20
Glentanner, Aberds	9	PSAS xxiv 1890 14	NMA DE54
Grassieslack, Aberds	10		Marischal 247.18
Aberdeenshire	33		Marischal 247.19
Aberdeenshire	34	Glasgow Cat 1911 857	Marischal 247.5
Castlehill, Angus	8	PSAS ii 1857 65	NMA DQ82 h
Craignish, Argyll	12	PSAS lxi 1927 107	NMA DE94 h
Poltalloch, Argyll	18	PSA 2 vii 1878 196	NMA HP019
Banffshire	1		Banff Mus
Greenlaw, Berwicks	4	Smith Inst Cat 1934 62	Smith Inst AK7

nr Alloa, Clack.	1	PSAS xxii 1888 355	formerly Alloa
Annan, Dumfries	4	PSAS lv 1921 11	NMA DE79
nr Annan, Dumfries	2	PSAS lv 1921 11	NMA DE77
nr Torthorwald, Dumfries	7		BM 88.7-19.16
nr Struthers, Fife	15	NMA Cat 1892 133	NMA DE20
nr Balliefeary, Invern	2		Inverness Mus
nr Husabost, Invern	7	PSAS lxvii 1933 312	NMA DQ300 h
Kilmuir, Skye, Invern	8	PSAS i 1854 180	NMA DE41
Skye, Invern	11	NMA Cat 1892 134	NMA DE40
Wester Golcantry, Inv	15	PSAS lxxiv 1940 149	NMA DE114 h
Bagindalen, Kinc	1	PSAS xxii 1888 403	Montrose Mus
Carnwath, Lanarks	1		Kelvingrove
Old Monkland, Lanarks	8	PSAS lvii 1923 14	NMA DE87
?Lanarkshire	11		Kelvingrove
?Lanarkshire	18	PSAS xvi 1882 145	NMA DE29
Lamancha, Peebles	5	PSAS xliii 1909 9	NMA DE67
Callander, Perths	4		NMA DE124
Comrie, Perths	5	PSAS xxiii 1889 150	NMA DE52
Lundie Farm, Perths	12		Smith Inst AK2
Strathgray, Perths	21		Blair Castle
Adabrock, Lewis, Ross	2	PSAS xlv 1911 27	NMA DQ212 h
Conon Mains, Ross	3	PSAS lxxii 1938 164	NMA DE62
Highfield, Ross	5	PSAS ii 1857 153	NMA DQ84 h
"	6	"	NMA DQ85 h
Poolewe, Ross	8	PSAS xiv 1880 45	NMA loan h
"	11	"	NMA loan h
"	12	"	NMA loan h
Wester Ord, Ross	14	PSAS viii 1870 309	NMA DQ266 h
nr Hawick, Roxb	7	Berw N.C.xi 1885-86 388	
Langraw, Roxb	23	NMA Cat 1892 133	NMA DE21
Sourhope Farm, Roxb	27	PSAS xxii 1888 390	NMA L1933.2113
Essenside, Selkirks	5	PSAS xxviii 1894 327	
Kildonan Strath, Suth	3	PSAS lxxii 1938 164	Hunterian
Palmallet Farm, Wigt	12	PSAS lxiv 1930 297	Broughton House
Borders	3	PSAS lxix 1935 439	NMA DE105

bag-shaped			
Dunnydeer, Aberds	6		Marischal 246
Alford, Aberds	3	PSAS lx 1926 98	NMA DE93
Aberdeenshire	29		Marischal 247.1
Blackness, Angus	3	PSAS xliv 1910 331	NMA DE71
Tealing, Angus	15	PSAS lxxii 1938 166	Albert Inst
Ballimore, Argyll	4	PSAS lxxvii 1943 184	MacRae h
Dalduff, Ayrshire	11		Ferguson h
nr Duns, Berws	2	PSAS lxi 1927 167	NMA DE96
nr Glasgow, Lanarks	3		Kelvingrove
?Lanarkshire	15	PSAS xvi 1882 145	NMA DE28
"	16	"	NMA DE27
"	12	"	NMA DE30
nr Elgin, Moray	6	PSAS lxxii 1938 165	BM WG1982
?Spynie Castle, Moray	8	PSAS lxxii 1938 165	Elgin Mus
Auldearn, Nairn	1		BM WG1979
Inshoch, Nairn	2	PSAS l 1916 242	NMA DQ76 h
Perthshire	26	PSAS lix 1925 234	NMA DE88
Highfield, Ross	7	PSAS ii 1857 153	NMA DQ86 h
Carronvale, Stirlings	1		Falkirk Mus
?Stirlingshire	2		Smith Inst AK3
"	3		Smith Inst AK6
High Knockglass, Wigt	6	Ayr & Wigt Coll ii 10	formerly Newton-Stewart
Kevans Farm, Wigt	8	PSAS lxiv 1930 297	Stranraer Mus
West of Scotland	1	PSAS xxiv 1890 445	NMA DE55
Scotland		PSAS lxi 1927 168	NMA DE95
bag-shaped with faceted section			
Benachie Hill, Aberds	4	PSAS lx 1926 17	NMA DE92
Craigieford, Aberds	5		Aberdeen 52.10.3
Loch Drum, Aberds	42	NMA Cat 1892 134	NMA DE38
prob Aberds	36		Walker, Aberdeen
prob Aberds	37		Aberdeen 56.10.3
Castlehill, Angus	7	PSAS ii 1857 65	NMA DQ81 h
Culloden, Inverness	4	PSAS lxxii 1938 165	BM WG1981

Strath, Skye, Invern	13	PSAS xix 1885 78	NMA DE2
nr Citadel, Leith, Midl	10	PSAS vi 1866 313	NMA DE36
nr Edinburgh	11	PSAS li 1917 236	NMA DE7
Tynehead, Midloth	17	PSAS xliii 1909 294	NMA DE68 h
nr Darnaway, Moray	5	PSAS xxxvi 1902 29	NMA DE66
nr Forres, Moray	7	PSAS lxxxi 1947 196	NMA DE117
Ardoch, Perths	1	PSAS xxxii 1898 55,460	NMA FQ294
Craighall, Perths	6	PSAS xx 1886 319	NMA DE44
Doune, Perths	8	PSAS lxxii 1938 167	Hunterian
South Friarton, Perths	20	PSAS xlviii 1914 371	NMA DE75
Haliburton Mains, Renf	2		Hunterian
oval-sectioned			
Alford, Aberds	1	PSAS xxvii 1893 12	NMA DE58
nr Pitcaple, Aberds	17	PSAS xxvii 1893 12	NMA DE59
Aberdeenshire	30		Marischal 247.2
prob Aberds	39		Marischal 255
Balmashanner, Angus	2	PSAS xxvi 1892 183	NMA DQ131 h
Ballimore, Argyll	2	PSAS lxxvii 1943 184	MacRae h
"	3	"	"
"	5	"	"
"	6	"	"
"	7	"	"
"	8	"	"
Islay, Argyll	14	PSAS xvi 1882 409	NMA DQ48 h
prob Islay, Argyll	15	PSAS lxxxiv 1950 228	NMA DE119
Dalduff, Ayrshire	1	PSAS xix 1885 315	NMA DQ92 h
"	2	"	NMA DQ93 h
Low Overmoor, Ayr	5		Dick Inst
Muirhead, Ayrshire	7	PSAS lxxiii 1939 331	NMA DE113
Ayrshire	8		Smith Inst AK4
nr Gullane, E.Lothian	2	PSAS lxii 1928 229	NMA DE126
Lochaber, Inverness	9		Ft.William 122
Roskhill, Skye, Invern	10	PSAS lxvii 1933 17	NMA DE99
Muirfad, Kirkcud	3	PSAS xxiii 1889 150	NMA DE53
Grosvenor Cres, Edinb	16	PSAS lxi 1927 45	?h

Alves, Moray	1	PSAS lxxii 1938 165	BM WG1983
Murray Asylum, Perth	16		Perth Mus 131
Caverton, Roxb	2	PSAS xxii 1888 390	NMA L1933.2112
nr Melrose, Roxb	25	PSAS xxxvi 1902 67	NMA DE65
Essenside, Selk	7	PSAS xxviii 1894 327	h
The Mound, Sutherland	4	PSAS l 1916 306	Dunrobin
Innermessan, Wigt	7	PSAS xiv 1880 135	formerly Newton-Stewart
Penninghame, Wigt	13	Ayr & Gall Coll v 42	NMA DE48
Borders	1	PSAS lxix 1935 439	NMA DE103
small squat			
Leslie, Aberds	12	Glasgow Cat 1911 856	Hunterian
Old Meldrum, Aberds	15		Aberdeen 52.10.1
Premnay, Aberds	18	PSAS lxxii 1938 69	NMA DE110
Aberdeenshire	31		NMA DE112
prob Aberds	38		Marischal 254
prob Dumfries	8		Wilson, Thornhill
The Forepark, Kinross	2		Kinross Mus
prob Holytown, Lanarks	7		Smith Inst AK5
?Lanarkshire	17	PSAS xvi 1882 145	NMA DE32
nr Callander, Perthshire	3	PSAS lxxxix 1956 463	NMA DQ321 h
River Tay, Perthshire	17	PSAS lxxxiv 1950 229	NMA DE118
Bowerhope, Selkirks	2		Hunterian
Douglas Burn, Selkirks	3	PSAS xliv 1910 10	NMA DE69
Bonar Bridge, Suth	1	PSAS lv 1921 275	NMA DE84
West of Scotland	2	PSAS xxiv 1890 445	NMA DE56
Scotland		NMA Cat 1892 133	NMA DE14
Scotland		NMA Cat 1892 134	NMA DE43
Scotland		PSAS lix 1925 235	NMA DE90
imports or copies thereof			
Forest of Birse, Aberds	7	PSAS ii 1857 153	NMA DE13
Kingoldrum, Angus	12	PSAS xiv 1880 171	NMA DE12
prob Angus	17	PSAS xxii 1888 402	Montrose Mus
Annan, Dumfries	5	PSAS lv 1921 11	NMA DE80
Carse Loch, Kirkcud	1		NMA DE5

Lamancha, Peebles	6		Hull Museum
"	7		"
"	8		"
Perthshire	23	PSAS lix 1925 234	NMA DE89
Arthur's Seat, Midloth	1	PSAS v 1864 126	NMA DQ89 h
North Berwick Law, E.L.	4	PSAS lx 1926 17	NMA DE91
unknown types			
prob Aberds	40		Marischal 247.21
Monikie, Angus	14	PSAS lxxii 1938 166	formerly Dundee
Crosshill, Kintyre, Arg	11		Campbeltown Mus
Southend, Kintyre, Arg	19		Campbeltown Mus
Enzie, Banffs	2	PSAS xxxiii 1899 56	Preshome Coll
Greenknowe, Gordon, Berw	3	PSAS lv 1921 17	NMA DE83
Lochore, Fife	14	Small 1823 30	
Cantray-Clava, Invern	3		formerly Marischal
Devonshaw, Kinross	1	PSAS xxii 1888 369	formerly Banff
Lesmahagow, Lanarks	21		Dalzell Coll.
York St Ferry, Lanarks	9		formerly Kelvin.
?Edinburgh	12		Selbie Coll
Burgie, Moray	3	PSAS 1 1916 207	formerly Forres
prob Morayshire	9	PSAS xxii 1888 342	formerly Elgin
?Tankerness, Orkney	2	PSAS xxi 1887 342	
Craig Makerran, Perth	7	Arch Scot iii iii ii 124	
Doune, Perthshire	9		Smith Inst AK8
?Perthshire	27	PSAS xxii 1888 338	formerly Perth
"	33	"	"
"	32	"	"
"	31	"	"
"	30	"	"
Poolewe, Ross	10	PSAS xiv 1880 45	NMA loan h
Dryburgh, Roxb	3	PSAS xxii 1888 381	formerly Jedburgh
Flight Farm, Roxb	6	Jeffrey i 191	h
Morebattle, Kale, Roxb	26	Berw N.C.1879-81 275	
Yetholm, Roxb	30		Hunterian
Whitehope, Yarrow, Selk	1	Berw N.C.1882-84 278	

Dryhope,Yarrow, Selk	4	PSAS xliv 1910 10	NMA DE70
Ettrick Forest, Selk	10	PSAS xiii 1879 310	
?Borders		Berw N.C. xii 185	

SPEARHEADS

class I

Whitehaugh Moss, Ayr	2	PSAS xxviii 1894 219	NMA DG88
Walton, Crawford, Fife	10	PSAS xxviii 1894 219	Lord Cochrane

class II

Greyfriars, Dumfries	9	PSAS lx 1926 27	NMA DG104 cast ?h

class III

Dunnideer, Aberds	23		BM 56.11-4.5
Ellon Moss, Aberds	5	PSAS xxvii 1893 12	NMA DG62
Nethermuir, Aberds	15	PSAS xxxiii 1899 412	NMA DG73
prob Aberds	22		Marischal
Dean Water, Angus	3	PSAS xvii 1883 97	NMA DG23
nr Campbeltown, Argyll	9		Inveraray
Islay, Argyll	18		NMA L155 ?h
Birkeyden, Berws	1	PSAS lv 1921 17	NMA DG84
Corsbie Moss, Berws	2	PSAS xiii 1879 333	NMA DQ253 h
Canisbay, Caithness	1	PSAS lxvii 1933 241	Duff-Dunbar
nr Annan, Dumfries	3	PSAS lv 1921 11	NMA DG81
nr Annan, Dumfries	2	PSAS lv 1921 11	NMA DG82
nr Annan, Dumfries	1	PSAS lv 1921 12	NMA DG83
Cardross, Dunbarts	1	NMA Cat 1892 137	NMA DG24
Old Kilpatrick, Dunb	3	Evans 1881 324	
Soutra Hill, E.Loth	5		NMA L1913.1
Douglas, Lanarks	3	PSAS xvi 1882 147	NMA DG36
Alves, Moray	1	PSAS xxv 1891 494	
Craigielee, Perths	5	PSAS xxiv 1890 14	NMA DG57
nr Doune, Perths	7	PSAS lxiii 1929 362	NMA DG92
Perthshire	18	PSAS lix 1925 234	NMA DG87
Craigsfordmains, Roxb	1	PSAS xxviii 1894 333	
Ettrick Forest, Selk	1		Dunrobin

Lunnasting, Shetland	1	PSAS xix 1885 139	
Scotland		NMA Cat 1892 137	NMA DG6
"		"	NMA DG8
"		"	NMA DG10
"		"	NMA DG11
"		PSAS xx 1886 219	NMA DG50
"			NMA L1957.5

class IV

Cruden, Aberds	4	PSAS liv 1920 149	NMA DG79
Glentanner, Aberds	9	PSAS xxiv 1890 14	NMA DG58
Lickleyhead, Aberds	11		NMA DG98
Little Kinnord, Aberds	12	PSAS xxvii 1893 12	NMA DG63
Pitsligo, Aberds	16	PSAS xxii 1888 346	Hunterian
Aberdeenshire	18		NMA DG99
prob Aberds	21		Marischal C24
prob Aberds	20		Aberdeen 48.7.3
Pitscandley, Angus	10	NMA Cat 1892 138	NMA DG42
prob Angus	11		Dundee Mus
nr Campbeltown, Argyll	8	Wilson 1863 390	
Islay, Argyll	12	PSAS xvi 1882 409	NMA DQ46 h
Ochiltree Moat, Ayr	1	Smith 1895 142	Hunterian
Avon nr Inverlochy, Banff	1	PSAS lxxiii 1939 333	NMA DG103
Carlusk, Boharm, Banff	3	PSAS xvi 1882 409	NMA DG31
Newmills,Lauder, Berw	4	PSAS lxx 1936 399	NMA DG96
Clayyard, Arran, Butes	1	PSAS xxiv 1890 143	NMA DG54
nr Freswick, Caithness	2	PSAS xlv 1911 15	
Caerlaverlock, Dumfries	4	PSAS xxii 1888 376	Thornhill 9
Fairholme, Lockerbie, "	8	Evans 1881 322	BM 71.12-19.1
Greyfriars, Dumfries	10	PSAS lx 1926 27	Dumfries cast ?h
Fingal, Fruin, Dunbarts	2	PSAS i 1854 144	
Tusculum, N.Berwick,E.L.	7	PSAS lxxiii 1939 332	NMA DG102
Cauldshiels, E.Loth	4	PSAS xl 1906 10	NMA DG76
prob Fife	11		Kirkcaldy Mus
prob Fife	12		Dundee Mus

Brackla, Abriachan, Inv	6		BM WG2042
Inverness	2	PSAS lxiii 1929 152	NMA DG91
Craigton, Kinross	1	PSAS xi 1876 168	
Auchindneich, Kinc	1	PSAS xxiv 1890 14	NMA DG56
Barend Moss, Kirkcud	2	PSAS xxii 1888 399	Kirkcud.Mus 448
Glenkens, Kirkcud	4	Arch x 1792 480	
Kells, Kirkcud	6	PSAS xxii 1888 399	Kirkcud Mus 845
Rerwick, Kirkcud	8	PSAS xxii 1888 399	Kirkcud Mus 510
Spearford, Kirkcud	9	PSAS xxii 1888 376	Thornhill Mus 8
Gartsheugh, Lanarks	4		Kelvingrove
nr. Carnwath, Lanarks	9		
Strathaven, Lanarks	6	PSAS xxii 1888 9	NMA DG51
Inshoch Wood, Nairn	3	PSAS lxxx 1946 8	Inverness Mus h
Nether, Firth, Orkney	3	PSAS Lxxxiii 1949 239	Aitken Coll
Broughton, Peebles	1	PSAS lxvi 1932 15	NMA DG93 ?forgery
Castlecraig, Peebles	2	PSAS xlviii 1914 16	NMA DG77
West Linton, Peebles	3	PSAS lxxxviii 1956 241	NMA DG107
Blacklaw, Bendochy, Perth	1	NMA Cat 1892 138	NMA DG43
nr Callander, Perths	4		NMA DQ324 h
Perthshire	17		NMA L1955.73
Linwood Moss, Renfrew	1	PSAS xxii 1888 407	?Paisley Mus
Rutherford Farm, Roxb	8	Berw N.C.xvii 1899 126	Kelvingrove
nr Inverewe House, Ross	6	PSAS xiv 1880 48	Inverewe House
nr Galashiels, Selk	2	PSAS lxi 1927 17	NMA DG89
Synton, Ashkirk, Selk	3		Hunterian
Rosehall, Suth.	3		
Linlithgow Loch, W.Loth	1		Falkirk Mus
Balgown Moss, Wigt	1	PSAS xvii 1883 283	NMA DG47
Scotland		NMA Cat 1892 137	NMA DG7
"		"	NMA DG9
"		"	NMA DG16
"		"	NMA DG32
"		" 138	NMA DG35
"		PSAS xxviii 1894 239	NMA DG68
"		Sibbald	

class IIIA

Freefield, Aberds	8		Aberdeen 55.2.1 ?h
Lesmoir, Rhynie, Aberd	10		NMA DG101
Premnay, Aberds	17		NMA DG100
New Downie, Angus	9	PSAS xxvi 1892 262	NMA DG61
Swinton, Berws	5	PSAS xxxvi 1902 67	NMA DG75
Tinwald, Dumfries	11	PSAS xxii 1888 376	Thornhill 10 h
Belhaven, E.Lothian	1	NMA Cat 1892 137	NMA DG3
Belhaven, E.Lothian	2	PSAS xvii 1883 94	NMA DG4
Glentrool, Kirkcud	5	PSAS lv 1921 29	NMA DQ239 h
Crawford, Lanarks	1	PSAS xvi 1882 147	NMA DG40
?nr Burghead, Moray	11	PSAS liv 1920 149	NMA DG80
nr Eildon, Roxb	3		NMA DG41
nr Eildon Hills, Roxb	5	PSAS lxix 1935 439	NMA DG95
Langburnshiels, Roxb	6	NMA Cat 1892 137	NMA DG25
Linton, Roxb	7	PSAS xvii 1883 96	NMA DG45
Kirklomie, Sutherland	2	NMA Cat 1892 137	Dunrobin
Barhullion, Wigt	2	PSAS xiv 1880 113,137	NMA DG52
Merton, Penninghame, Wigt	3	PSAS xiv 1880 137	NMA DG19
Scotland		NMA Cat 1892 137	NMA DG2
"		"	NMA DG12
"		"	NMA DG13 ?forgery
"		"	NMA DG14
"		Sibbald	

class IVB

?nr Ardmillan, Ayr	3	NMA Cat 1892 137	NMA DG18
nr Lordscarnie, Fife	9	PSAS xx 1886 318	NMA DG48
Roseisle, Morayshire	9	PSAS xxii 1888 342	Elgin Mus

class V

Black Midden, Rhynie,Ab.	1		NMA DG97
Bonnykelly, Aberds	2		Marischal 255.1
prob Fingask, Aberds	23	PSAS xxvii 1893 367	Fingask Coll
Loch Kinnord, Aberds	13	PSAS lxxxii 1948 297	Marischal 255.2
Lochlundie Moss, Aberds	14	PSAS xxiii 1889 89	Marischal 257
prob Aberdeenshire	19		Marischal

Ballimore, Argyll	1	PSAS lxxvii 1943 184	MacRae h
"	3	"	MacRae h
nr Campbeltown, Argyll	10		Inveraray
Fort, Craignish, Argyll	11	PSAS lxi 1927 107	NMA DG90 h
Kilconan, Argyll	13	PSAS xix 1885 12	Inveraray h
prob Poltalloch, Argyll	14		NMA HP020
Torran, Ford, Argyll	15	PSAS xviii 1884 179,207	NMA DQ116 h
Argyll	17		Inveraray
Castlehill,Forfar,Angus	1	PSAS xix 1885 78	NMA DQ78 h
Cauldhame,Brechin, Angus	2	PSAS i 1854 181	h
nr Banff	2	PSAS xxii 1888 369	Banff Mus
Kettleshiels, Berw	3	PSAS lv 1921 17	NMA DG85
Dalswinton, Dumfries	6	PSAS lix 1925 11	NMA DG86
Dunscore, Dumfries	7	PSAS xxii 1888 376	Thornhill 7
Dumfries	12		Kilmarnock
Brownrigg,N.Berwick,E.L.	3		NMA DG106
Traprain Law, E.Loth	6	PSAS lvi 1922 212	NMA
Gospertie, Fife	2-7	Small 1823	h
Galloway	1	Wilson 1863 389	
Sleat, Skye, Invern	3	PSAS iii 1860 101	NMA L1954.4 h
Skye, Invern	5	NMA Cat 1892 138	NMA DG34
Kinneff Castle, Kincs	3	PSAS iii 1860 102	NMA DG60
Heathery Haugh, Kincs	4		Montrose Mus h
"	5		Montrose Mus h
Balmaclellan, Kirkcud	1	PSAS iv 1862 417	NMA DG44
Buchan,Glentrool,Kirkc.	3	PSAS ix 1872 357	NMA DG30
Kells, Kirkcud	7	PSAS xxii 1888 399	formerly Kirkcud.
Lanark Parish, Lanarks	5	PSAS xvi 1882 147	NMA DG38
?Lanarkshire	2	PSAS xvi 1882 147	NMA DG37
Lanarkshire	7		Scott-MacKirdy
?Lanarkshire	8	PSAS xvi 1882 147	NMA DG39
Duddingston Loch,Midloth	5-	PSAS lvi 1922 360 lxix 1935 440	NMA DQ2 NMA DQ3 NMA DQ4 NMA DQ8

Duddingston Loch, Midloth (cont'd)			NMA DQ10 h
"			NMA DQ11
"			NMA DQ13
"			NMA DQ20
nr Edinburgh	1	PSAS li 1917 236	NMA DG33
Murrayfield, Edin	4	PSAS xxvii 1893 7	NMA DG72&DQ194 h
Auchtertyre, Moray	3	PSAS ix 1872 435	NMA DQ107 h
Burghead, Moray	5	PSAS xxiv 1890 146,379	NMA DG59
Cullerne, Moray	8	PSAS liv 1920 124	NMA DQ231 h
"	7	"	NMA DQ232 h
Inshoch, Nairn	1	NMA Cat 1892 153	NMA DQ74 h
Borland, Perths	2	PSAS xxxvi 1902 66	NMA DG74
nr Callander, Perths	3		NMA DG105
Drumlanrig, Perths	8		Perth Mus
Monmore, Perths	10	PSAS xvi 1882 27	NMA DQ50 h
?Perthshire	11		NMA loan
"	12		"
"	13		"
"	14		"
"	23	PSAS xxii 1888 338	formerly Perth
"	24	"	"
Adabrock,Lewis,Ross	1	PSAS xlv 1911 27	NMA DQ215 h
Highfield, Ross	3	PSAS ii 1857 153	NMA DQ88 h
nr Talladale, Ross	7	PSAS xiv 1880 49	NMA L1958.15
Easter Wooden, Roxb	2	PSAS xxviii 1894 334	Hawick Mus
nr Hawick, Roxb	12		Hawick Mus
Teviot,Weensland,Roxb	11		Hawick Mus
Warrior's Grave,Southfield Roxb	9	PSAS xxii 1888 395	Hawick Mus
Bannockburn, Stirling	1	Evans 1881 314	formerly BM
nr Stirling	3	PSAS xiv 1880 96	NMA DG49
nr Stranraer, Wigt	4	PSAS xxx 1896 7	NMA DG64
Wigtownshire	5	PSAS xxx 1896 7	NMA DG65
prob Wigt	6	NMA Cat 1892 137	NMA DG15
West of Scotland	1	PSAS xxviii 1894 237	NMA DQ196 h

West of Scotland	2	PSAS xxviii 1894 237	NMA DQ197 h
Scotland			Smith Inst AL5
"		NMA CAT 1892 137	NMA DG20
"		"	NMA DG21
"		"	NMA DG22
"		"	NMA DG26
"		"	NMA DG27
"		"	NMA DG28
"		NMA Cat 1892 140	NMA DG46
"		PSAS xxviii 1894 239	NMA DG66 ?forgery
"		"	NMA DG67
class VA			
Freefield, Aberds	6		Aberdeen 55.2.2
Freefield, Aberds	7		Aberdeen 55.2.3
Ballimore, Argyll	2	PSAS lxxvii 1943 184	MacRae h
"	4	"	"
"	5	"	"
"	7	"	"
Torran,Ford,Argyll	16	PSAS xviii 1884 179,207	h
Gathercauld,Ceres,Fife	1	PSAS lxviii 1934 19	NMA DG94
Auchtertyre, Moray	2	PSAS ix 1872 435	NMA DQ106 h
Inshoch, Nairn	2	NMA Cat 1892 153	NMA DQ75 h
Perthshire	19		Kelvingrove
nr Falkirk, Stirling	2	PSAS xxiii 1889 9	NMA DG53
Scotland			Smith Inst AL4
class VB			
Kinghorn, Fife	8	PSAS 1864 127	NMA DG5
Sleat, Skye, Invern	4	PSAS iii 1860 101	NMA L1954.5 h
Duddingston Loch, Midloth		PSAS lvi 1922 360 lxix 1935 440	NMA DQ5 h
"			NMA DQ6
"			NMA DQ7
"			NMA DQ302
"			BM 79.5-6.6
Murrayfield, Edinburgh	3	PSAS xxvii 1893 7	NMA DG71&DQ195 h

Badintinan, Moray	4	PSAS xxxii 1898 6	NMA DG70
prob Perthshire	15		NMA loan
prob Perthshire	20		NMA L1957.4
Scotland			Smith Inst AL1
<u>with lunate openings</u>			
Denhead, Angus	4	PSAS xvii 1883 94	NMA DG1 h
Glen Clova, Angus	5		NMA h
Glen Clova, Angus	6		NMA h
Ballimore, Argyll	6	PSAS lxxvii 1943 184	MacRae h
Ardersier Point, Invern	1	Wilson 1863 392	
Duddingston Loch, Edin		PSAS lvi 1922 360	NMA DQ9 h
"		"	NMA DQ14 h
Crieff, Perthshire	6	PSAS xxii 1888 338	Perth Mus
prob Perthshire	16		NMA loan
prob Perthshire	25	PSAS xxii 1888 338	formerly Perth
River Ewe, Ross	2	PSAS xiv 1880 48	
Highfield, Ross	4	PSAS ii 1857 153	NMA DQ87 h
Teith-Forth, Stirling	4		Smith Inst AL8
Stirlingshire	5	PSAS ii 1857 153	NMA DG29
Scotland			Smith Inst AL6
<u>barbed class VI with lunate openings</u>			
Duddingston Loch, Edin		PSAS lvi 1922 360	NMA DQ12 h
<u>unknown types</u>			
Corgarff, Aberds	3	PSAS xxii 1888 369	formerly Banff
Drumbeg, Maybole, Ayr	6	Smith 1895 181	
Ochiltree Moat, Ayr	4-5	"	h
Enzie, Banff	4	PSAS xxxiii 1899 56	Preshome Coll
Castlemain, Dumfries	5	PSAS i 1854 139	?NMA
Hulyhill, Midloth	2	PSAS x 1874 151	
Culbin Sands, Moray	6	PSAS vii 1868 396	?NMA
Knowe of Saverough, Orkney	1-2	PSAS xxi 1887 339	
Huntingtower, Perth	9		Dundee Mus
prob Perthshire	21	PSAS xxii 1888 338	formerly Perth
prob Perthshire	22	"	formerly Perth
nr Whiterope Tunnel, Roxb	10	PSAS v 1864 214	?NMA

Craggan Soiller, Suth	1	PSAS xliii 1909 242	formerly Dunrobin
Drangower Farm, Wigt	7	Ayr & Wigt Coll ii 13	

SWORDS

U-type

Tay nr Mugdrum, Perth	15	PSAS xxiv1890 16	NMA DL41

related V-type

Clyde nr Renfrew	1	Glasgow Cat 1911 880	Kelvingrove

Wilburton

Poldar Moss, Stirling	4	PSAS xxiii 1889 9	NMA DL40

three-slot Wilburton

Montrose, Angus	11	PSAS xxii 1888 337	Peebles Mus
Corsbie Moss, Berws	1	PSAS xiii 1879 333	NMA DQ252 h
Forse, Caithness	1	PSAS ii 1857 33	NMA DL2
near Peebles	3	Evans 1881 289	

Wilburton-Ewart

Tay nr Elcho, Perth	12	PSAS xxii 1888 337	Perth Mus

Hallstatt

?Haddo House, Aberds	6	PSAS xxii 1888 362	
Leuchland, Angus	9	PSA 2 1873 427	BM WG1237 h
"	10	"	BM WG1238 h
Tay nr Elcho, Perth	14	PSAS vi 1866 271	NMA DL4
Tay nr Mugdrum, Perth	16	PSAS xxxiii 1899 78	?Newburgh Mus
Tay nr Perth	19	PSAS xxxii 1898 316	NMA DL5
Clyde nr Renfrew	2	Glasgow Cat 1911 880	Kelvingrove
Borders		Evans 1881 289	
Scotland		NMA Cat 1892 148	NMA DL28

Late Ewart-Hallstatt

Schivas House, Aberds	8	PSAS xiii 1879 328	NMA DL24
nr Arbroath, Angus	1	PSAS lv 1921 24	NMA DL51

bronze pommel

Tarves, Aberds	11	PSAS vi 1866 312	BM 58.11-15.2 h
Skye, Inverness	8	PSAS xiii 1879 326	
Grosvenor Cres, Edin		PSAS xiii 1879 320	NMA DQ201 h

Leadburn, Peebles	2	PSAS xxv 1891 6	NMA DL42
Inverbroom, Ross	5	PSAS xxx 1896 352	NMA DL45 cast Aberdeen Mus
Scandinavian			
Dalduff, Ayr	3	PSAS xiii 1879 332	NMA DQ95-96 h
wooden			
Grotsetter, Orkney	1		NMA
Ewart and Late Ewart			
Brawlands, Aberds	1	PSAS lxxii 1938 69	NMA DL59 h
Grassieslack, Aberds	2	PSAS xli 1907 128	h
Haddo House, Aberds	3-5	PSAS xxii 1888 362	Marischal 253.2 h
Memsie, Aberds	7	Wilson 1863 394,426	
Towie, Aberds	9		Hunterian
Wellhouse Farm, Aberds	10	PSAS iv 1862 386	
Tarves, Aberds	12	PSAS vi 1866 312	BM 58.11-15.1 h
"	13	"	
Aberds	14	PSAS lx 1926 19	NMA DL53
Aberds	15	PSAS lx 1926 19	NMA DL54 cast
prob Aberds	16		Marischal 256
prob Aberds	17		Aberdeen Mus
Cauldhame, Angus	2	PSAS i 1854 181,225	NMA DL10 h
"	3	"	NMA DL8 h
"	4-5	"	
prob Craigo, Angus	6	PSAS xxii 1888 403	Brechin Mus
Easterton, Angus	7	PSAS xiii 1879 328	NMA DL17
Glen Clova, Angus	8		NMA h
Station,Brechin,Angus	12	PSAS xxii 1888 403	Montrose Mus
Denhead, Angus	13	Arch Scot v 1890 appl9	h
Ballimore, Argyll	1	PSAS lxxvii 1943 184	MacRae h
"	2	"	MacRae h
Craig's Farm, Argyll	3		Campbeltown Mus
Tiree, Argyll	4	PSAS xvii 1883 285	
Coll, Argyll	5	PSAS xii 1878 686	
Kilconan, Argyll	6-12	PSAS xix 1885 12,328	Inveraray Castle (7)
Leannan Buidhu, Islay, Arg	13	PSAS xx 1886 102	

Shuna, Argyll	14	PSAS xi 1876 121	NMA DL21 h
"	15	"	St.Andrews Mus
"	16	"	Kelvingrove
Girvan, Ayr	1	Glasgow Cat 1911 881	formerly St.Andrews
nr Irvine, Ayr	2	Evans 1881 289	
Carlochan, Ayr	4	Wilson 1863 394	
nr Blairshinnoch, Banff	1	PSAS xxii 1888 369	Banff Mus
Boars Moss, Banff	2		Elgin Mus
Banffshire	3		Banff Mus
Banffshire	4		Banff Mus
Mey, Caithness	2	PSAS xliii 1909 20	NMA DL50
Cauldholme, Dumfries	1-2	PSAS lvii 1923 146	formerly Drumlanrig Castle
Dumfriesshire	3	PSAS vi 1866 112	NMA DL30
nr Keith House, E.Loth	1	PSAS xvii 1883 70	NMA DL16
Southfield, E.Loth	2	PSAS xxiv 1880 277	NMA DL20
Fife	1	Evans 1881 289	
Carn Dearg,Muck,Invern	1	PSAS lxxxviii 1956 238	NMA DL61
Culloden, Invern	2	PSAS lxxii 1938 150	
Lyndale Moss, Skye	3	Arch Scot iv 1832 365	Soc Ant Lond
Sleat, Skye, Invern	4	PSAS iii 1860 101	NMA L1954.2 h
Rigg, Skye, Invern	5	PSAS xxi 1887 9,221	NMA DL37 h
"	6	"	NMA DL38 h
Skye, Invern	7	PSAS xiv 1880 96	NMA DL36
Iochdar, S.Uist,Invern	9	PSAS vi 1866 252,271	NMA DL3 h
"	10	"	
Waternish, Skye, Invern	11	PSAS xxiii 1889 258	
Balnagubs, Kinc	1		Marischal 253
Jacksbank Fm, Kinc	2	PSAS xiv 1880 316	NMA DL18 h
"	3	"	NMA DL19 h
Cowie Moss, Kinc	4	PSAS xiii 1879 328	NMA DL27
Netherley, Kinc	5		Marischal 252
Netherley, Kinc	6	PSAS xxii 1888 358	Marischal 253.2
Heathery Haugh, Kinc	7		Montrose Mus h
"	8		Montrose Mus h

Carlinwark Loch,Kirkcud	1	PSAS x 1874 261	NMA DL26
Kelton, Kirkcud	2	PSAS xix 1885 327	NMA DQ118 h
prob New Abbey, Kirkcud	3		Dumfries Mus
Cowgill, Lanarks	1	PSAS xxxii 1898 8	NMA DL22
Millbank,Douglas,Lanark	2	PSAS forthcoming	Earl of Home
?Lanarkshire	3	Arch.Ass.J.xvii 1861 210	NMA DL13
?Lanarkshire	4	"	NMA DL14
Arthur's Seat, Edinburgh	1	Wilson 1863 352	NMA DQ90 h
"	2	"	NMA DQ91 h
Cragleith, Midloth	3		Hunterian
Edinburgh	4	PSAS xliii 1909 178	NMA DL49
prob Edinburgh	5	PSAS lxiii 1929 12	NMA DL55
Gogar House, Midloth	6	PSAS vi 1866 311	NMA DL6 h
Midlothian	7	PSAS xxxvii 1903 348	NMA DL47
Midlothian	8	PSAS xxxvii 1903 348	NMA DL48
Duddingston Loch, Midl	9-	PSAS lvi 1922 360	NMA DQ16 h
			NMA DQ22
			NMA DQ25
			NMA DQ35
			NMA DQ37
			NMA DQ42
			NMA DQ43
			NMA DQ303
Grosvenor Cres, Edin	10-	PSAS xiii 1879 320	NMA DQ199 h
			NMA DQ200
			NMA DQ236
			NMA DQ237
			NMA DQ306
			Hunterian
Sweethillock, Moray	1		NMA DL58
Auchencorth, Peebles	1	PSAS xxxiv 1900 435	NMA DL46
Bailielands, Perths	1	PSAS xxxii 1898 314	NMA DL23
Blairgowrie, Perths	2		Kelvingrove
nr Br.of Allan, Perths	3		Smith Inst A17
Crieff, Perthshire	4		Perth Mus 135

Druidstone Pk, Perths	5	PSAS lvii 1923 146	Marischal 253.2 h
"	6		Hunterian
nr Dunsinane Hill, Perths	7	PSAS lvii 1923 146	NMA L1957.2 h
"	8	"	NMA L1957.3 h
Huntingtower, Perths	9		Dundee Mus
Keir, Perths	10		Smith Inst AMA1
prob Perthshire	11	PSAS xxii 1888 337	formerly Perth
Tay at Elcho, Perths	13	PSAS xxii 1888 337	formerly Perth
Tay nr Newburgh, Perths	17	Anderson 1886 173	
prob Perthshire	18	PSAS xxii 1888 337	formerly Perth
prob Perthshire	20	PSAS xxii 1888 337	formerly Perth
Perthshire	21		Marischal 253.1
Aird, Lewis, Ross	1	PSAS xxvii 1893 38	NMA DL43 h
"	2	"	NMA DL44 h
Ardintoul, Ross	3	PSAS lxxxii 1948 317	NMA DL60
Fendom, Tain, Ross	4	PSAS lix 1925 14	NMA DL52
Flight, Castleton, Roxb	1	R.C.Roxb 1956 13-14	
Ballagan, Stirlings	1	PSAS xi 1876 169	NMA DL29
Cambuskenneth, Stirl	2	PSAS xviii 1884 179	formerly Alloa
Graham's Dyke, Carriden, Stirlings	3	Gordon 1726 118 pl li	NMA DL1
Cairnside, Kirkcolm, Wigt	1	Ayr & Gall Coll v 42	
Dowies Burn, Wigt	2	PSAS xiv 1880 139	NMA DL39
Felhaar, Wigt	3	Glasgow Cat 1911 881	Kelvingrove
Glenluce, Wigt	4	PSAS lxiii 1929 20	NMA DL56
Borders		PSAS lxix 1935 440	NMA DL57
Scotland		NMA Cat 1892 145	NMA DL11
			NMA DL12
			NMA DL15
			NMA DL25
			NMA DL31
			?NMA DL32 & DL33
			NMA DL34
			NMA DL35
			Hunterian A115

TONGUE-SHAPED CHAPES		
Tarves, Aberds	PSAS vi 1866 312	BM 58.11-15.5 h
Aberdeenshire	PSAS xxvii 1893 351n	Marischal 254
Cauldhame, Angus	PSAS i 1854 181	NMA DL9 h
Kilconan, Argyll	PSAS xix 1885 12	Inveraray h
Corsbie Moss, Berws	PSAS xiii 1879 333	h
Gogar House, Midloth	PSAS vi 1866 311	NMA DL7 h
Clyde at Bowling, Renfrew		Kelvingrove h
FERRULES		
Leetside, Berws	PSAS xxiv 1890 16	NMA DG55
Camptown, ?E.Lothian	PSAS xvi 1882 228	
near Edinburgh	PSAS li 1917 234	NMA DO5
Torrs, Glenluce, Wigt	PSAS xv 1881 273	
West of Scotland	PSAS xxviii 1894 237	NMA DQ198 h
		NMA DG69
SOCKETED KNIVES		
Clova, Angus	PSAS xxvii 1893 12	NMA DO31
Forfar, Angus	PSAS xxiii 1889 15	NMA DQ130 h
Campbeltown, Argyll	Wilson 1863 390	h
Traprain Law, E.Lothian	Burley 1957 T7	NMA
"	" T8	NMA
Falkland, Fife	PSAS xxix 1895 9	NMA DO32
Kincluny, Kincs	PSAS liv 1920 149	NMA DG78
Little Crofty, Orkney	PSAS xxi 1887 339	
Quoykea, Orkney	PSAS lvi 1922 356	NMA DQ262 h
Kilgraston, Perthshire	PSAS lvi 1922 357	BM WG2020
Alness, Ross	PSAS lxv 1931 10	NMA DO40
Wester Ord, Ross	PSAS lix 1925 113	NMA DQ268 h
Scotland	PSAS xxviii 1894 239	NMA DO37
?Scotland	Glasgow Cat 1911 847	
CURVED SOCKETED KNIVES		
Sleat, Skye, Inverness	PSAS iii 1860 101	NMA DO9 h
Cullerne, Findhorn, Moray	PSAS liv 1920 13,124	NMA DQ233 h
Wester Ord, Ross	PSAS lix 1925 113	NMA DQ270 h

SOCKETED KNIFE, SINGLE-EDGED

nr Crossraguel Abbey, Ayrshire Munro,Preh.Scot. fig 89

TANGED KNIVES

Traprain Law, E.Lothian	Burley 1956 T9	NMA
Glentrool, Kirkcud	PSAS lv 1921 29	NMA DQ241 h
Monmore, Perthshire	PSAS xvi 1882 27	NMA DQ53
Jarlshof, Shetland	Hamilton 1956 29	NMA
Nordhouse, Shetland	PSAS xi 1876 471	NMA DO6

SOCKETED GOUGES

Torran, Ford, Argyll	PSAS xviii 1884 179,207	NMA DQ117 h
Ardeer, Ayrshire	PSAS lxvii 1933 27	
Fortrie, Banffshire	PSAS i 1854 138	NMA DQ100 h
Traprain Law, E.Lothian	Burley 1956 T13	NMA
Achnahanaid, Skye		Cambridge Mus h
prob Lanarkshire		NMA DP9
nr Tynehead, Midloth	PSAS xliii 1909 294	NMA DO36 h
Monmore, Perthshire	PSAS xvi 1882 27	NMA DQ54 h
River Tay, Perthshire	PSAS v 1864 127	NMA DO3
Adabrock, Lewis, Ross	PSAS xlv 1911 27	NMA DQ213 h
Wester Ord, Ross	PSAS lix 1925 113	NMA DQ269 h
Essenside, Selkirk	PSAS xxviii 1894 327	?h

CHISELS

probable Irish type

Traprain Law, E.Lothian	Burley 1956 T11	NMA
Adabrock, Lewis, Ross	PSAS xlv 1911 27	NMA DQ214 h
Glenluce, Wigt	PSAS xxi 1887 193	NMA D931.647

lugged type

Strachur, Argyll	Wilson 1863 381	h
Traprain Law, E.Lothian	Burley 1956 T12	NMA
Scotland	PSAS xii 1878 613	NMA DO7

plain-bar type

Dumfries	PSAS xxviii 1894 180	
Traprain Law, E.Lothian	Burley 1956T14-T26	NMA
Glentrool, Kirkcud	PSAS lv 1921 29	NMA DQ 244 h
"	"	NMA DQ 245 h

Loch Laoghal, Sutherland	PSAS xxviii 1894 180	
with wider blade		
Ayrshire		Ayr Museum
Dungyle, Dumfries		formerly Dumfries
Glenluce, Wigt	PSAS xv 1881 272	NMA
looped ?chisel		
Blairbuy, Wigt	PSAS xxiii 1889 221	NMA DE51
socketed		
?Perthshire	PSAS xxii 1888 338	formerly Perth
Scotland		NMA DO4
Scotland		NMA DP10
flat-axe type		
?Eskdalemuir, Dumfries	Glasgow Cat 1911 858	
Killin, Perthshire		Smith Inst AJ13
shouldered chisel-adze		
Kirkconnel, Dumfries	PSAS lxii 1928 150	NMA DO39
Perthshire	PSAS lxii 1928 151	
(Balneil, Wigt	PSAS 1 1916 302)	
adze with stop		
Kintore, Aberds		Aberdeen Mus
Islay, Argyll		NMA DQ49 h
Scotland		NMA DC41
unknown type		
Munches Hill, Kirkcud	Trans Dumf & Gall..1897 29	
Scotland	Glasgow Cat 1911 858	
"	" " 857	
SICKLES		
Premnay, Aberds	PSAS vii 1868 361,376	NMA DO2
Dores, Inverness	PSAS xxiv 1890 447	NMA DO29
River Tay, Perths	PSAS vii 1868 376	Perth Mus
Ledberg, Sutherland	Sinclair 1745 xvi 206	
?Scotland	PSAS xxii 1888 350	Hunterian
SOCKETED HAMMERS		
Inshoch Wood, Nairn	PSAS lxxix 1945 180	Inverness Mus h
Adabrock, Lewis, Ross	PSAS xlv 1911 27	NMA DQ216 h

ANVILS

Inshoch Wood, Nairn	PSAS lxxix 1945 180	Inverness Mus
Kyle of Oykel, Sutherland	PSAS xvi 1882 23	NMA D030

FLESH FORKS

type 1

1-2 Ballinderry Crannog, Co.Westmeath Hencken 1942 12 fig.3

3 Lurgy, Dungannon, Co.Tyrone Armstrong 1924 117 fig.12

4 Bishopsland, Co.Kildare O'Riordain 1946 pl.xiii,15

5 Little Thetford, Cambs BM 1953 pl.iv,3

type 2

6 Eaton, Norwich, Norfolk PSA 2 xi 1885 48 fig.v

7 Lulworth, Dorset Ant J xv 1935 449 fig.1

8 Argyll, Scotland Glasgow Cat 1911 862 no.7

9 Dunaverney Bog, Ballymoney, Co.Antrim Armstrong 1924 116 fig.11

unknown type

10 Toome Bridge, R.Bann Belfast Museum 201-1955

11 Arran PSAS xxxii 1898 18

12 Eriswell, Suffolk Ant J xxxv 1955 218

13 Lough Gara Dublin Museum

RAZORS

Braes of Gight, Aberds	PSAS xxv 1891 135	NMA DQ285 h
Bowerhouses, E.Lothian	PSAS vi 1866 357	NMA DQ66 h
		NMA DQ67 h
		NMA DQ68 h
Traprain Law, E.Lothian	Burley 1956 T28	NMA
Cullerne, Morayshire	PSAS liv 1920 124	NMA DQ235 h
Glentrool, Kirkcud	PSAS lv 1921 29	NMA DQ242 h
		NMA DQ250 h
Quoykea Moss, Orkney	PSAS lvi 1922 356	NMA DQ263 h
Adabrock, Lewis, Ross	PSAS xlv 1911 27	NMA DQ217 h
		NMA DQ218 h
		NMA DQ219 h

class III

Traprain Law, E.Lothian	Burley 1956 T27	NMA
Kinleith, Midlothian	PSAS v 1864 86	NMA D08

BUCKETS AND CAULDRONS

Dalduff, Kilkerran, Ayr	PSAS xiii 1879 332	NMA DQ97-98 (A2)
Flanders Moss, Cardross, Dunb	PSAS xxii 1888 36	NMA DU11 (bucket)
Duddingston Loch, Midloth	PSAS xix 1885 315	NMA DQ1 (bucket)
Darnhall, Eddleston, Peeb	PSAS xxxix 1905 14	NMA DU8 (A1)
West of Scotland	PSAS xix 1885 313	NMA DU2 (B1)
Scotland		NMA DU4 (A2)

SHIELDS

Yetholm type

Achmaleddie, New Deer, Aberds	PSAS xxxii 1898 8	NMA DN4
Luggtonridge, Beith, Ayrshire	PSAS v 1864 165	Soc Ant Lond (5-6)
Yetholm, nr Kelso, Roxb	PSAS v 1864 165	NMA DN1
"	viii 1870 393	NMA DN2
"		NMA L1933.2114
?Craigdarroch, Ross	Wilson 1863 399	

Coveney type

Achmaleddie, New Deer, Aberds	PSAS xxxii 1898 8	NMA DN5

PINS

swan's-neck sunflower

Ythsie, Tarves, Aberds	PSAS xxvii 1893 349	BM 58.11-15.5 h
? "		
nr Campbeltown, Argyll		Inveraray
nr Campbeltown, Argyll		Inveraray
Orrock, Burntisland, Fife	PSAS lxxxii 1948 306	
?Tentsmuir, Fife		
Cramond, Midlothian	PSAS liv 1920 149	NMA FT76
Grosvenor Cres, Edinburgh	PSAS xiii 1879 320	NMA DQ202 h
?nr Perth	PSAS lv 1921 35	Perth Mus
Loch Broom, Ross	PSAS lxxxiii 1949 243	NMA D050

sunflower pin mould

Jarlshof, Shetland	Hamilton 1956 28	NMA

cup-headed pin

Sleat, Skye, Inverness	PSAS iii 1860 101	NMA L1954.3 h

stem-looped disc-headed pin

Glentrool, Kirkcud	PSAS lv 1921 29	NMA DQ243 h

PENANNULAR ARMLETS

Braes of Gight,Aberds	PSAS xxv 1891 133	NMA DQ278-283 h
	bronze, 4 type 2, 2 type 2a	
Rehill, Aberds	PSAS i 1854 138	NMA DQ70-71 h
	bronze, type 1, type 2	
Balmashanner, Angus	PSAS xxvi 1892 182	NMA DQ134-144 h
	bronze, three type 2, eight type 1	
Carmylie Hill, Angus	Wilson 1863 454	
	bronze,	
Gallow Hill, Angus	Anderson 1886 211	
	gold, five type 1	
Coul, Islay, Argyll	Anderson 1886 213	
	gold, three dozen type 1	
Glenaray, Argyll		Inveraray Castle h
	gold, type 1	
Tangy, Kintyre, Argyll		
	gold, type 1	
prob nr Banff	PSAS xxii 1888 369	Banff Mus
	bronze, two type 1	
Duff House, Banff		NMA EQ120-121 h
	gold, two type 1	
Kirk Hill, St.Abbs, Berw	PSAS lxvi 1932 26	NMA FE78-79 h
	gold, type 1, ?type 2	
Ormidale, Arran	PSAS v 1864 214	NMA FE10-13 h
	gold, two type 1, two ?type 2	
South Kascadale, Arran	Wilson 1863 458	
	gold, type 1	
Hillhead Farm, Caithness	PSAS xlvii 1913 433	NMA FE69-70 h
	gold, two type 1	
Alloa, Clackman	PSAS xvii 1883 447	NMA EQ118-119
	gold, type 1, type 2	
prob nr Dumbarton	PSAS iii 1860 24	NMA FE4-5 h
	gold, two type 1	
Galla Law, E.Lothian	Anderson 1886 213	
	gold, type 1	

nr Preston Tower, E.Loth	Evans 1881 382	NMA D017
	bronze, type 1	
Traprain Law, E.Lothian	Burley 1956 T29	NMA
	bronze, type 1	
Orrock, Fife	PSAS lxxxii 1948 306	
	bronze, three type 1	
Galloway	Wilson 1863 456	
	gold, type 2	
Conage, Pettie, Invern	PSAS ix 1872 436	NMA D016
	bronze, type 2	
Kilmallie, Invern	Anderson 1886 213	
	gold, two type 1	
Briglands, Kinross	PSAS xxxi 1897 234	NMA FE62
	gold, type 1	
Stonehill Wood, Lanarks	PSAS ii 1864 401	Earl of Home
	gold, two type 1, one type 4	
?Lanarks		NMA D022
	bronze, type 1	
Auchtertyre, Moray	PSAS ix 1872 435	NMA DQ110-115
	bronze, type 1, two type 2a, four type 2	
Covesea, Moray	PSAS lxv 1931 177	NMA
	bronze, type 1, two type 2, two type 2a	
Upper Dallachy, Moray	PSAS xl 1906 194	
	gold, type 1	
Caerlee,Innerleithen	Chambers, Hist of Peeb, 22,37	
Peeblesshire	bronze, several type 1	
prob nr Fingask, Perths	PSAS xxvii 1893	
	gold, type 1	
Monmore, Perths	PSAS xvi 1882 27	NMA DQ56
	bronze, type 1	
Shieldhill, Perths	Anderson 1886 213	
	gold, two type 1	
prob Perthshire		NMA L1957.8
	gold, type 1	

Wester Ord, Ross	PSAS viii 1870 309	NMA DQ272 h
	bronze, type 2	
Essenside, Selkirk	PSAS xxviii 1894 327	
	bronze, type 1	
Bonnyside, Stirling	Anderson 1886 210	NMA FE8
	gold, type 1	
Boreland, Wigt	Ayr & Wigt Coll v 38	
	gold, type 1	
Kirkmaiden, Wigt	PSAS lxxxii 1948 293	
	gold, type 1	
Penninghame, Wigt	PSAS xxv 1891 417	NMA FE57
	gold, two type 1	
Western Isles	PSAS xvii 1883 381	NMA FE52
	gold, type 1	
North of Scotland	Anderson 1886 64	
	gold	
Scotland		Kelvingrove
	gold, type 1	
Scotland		NMA D033
	bronze, type 1	
Scotland		NMA D034
	bronze, type 1	

TYPE 3 GOLD ORNAMENTS- all type 3c unless otherwise noted.

Glenaray, Argyll	Glasgow Cat 1911 826	Inveraray Castle (two)
Islay	PSAS lvii 1923 319	BM 1920.3-16.1
Sunderland, Islay	Wilson 1863 461	
Ayrshire	Wilson 1863 462	?
"	PSAS lvii 1923 319	?
Berwickshire	PSAS lxix 1935 20	NMA FE84 type 3a
Arran	PSAS lvii 1923 319	
Whitefarland, Arran	PSAS lvii 1923 314	Kelvingrove
nr Alloa, Clackman	PSAS lxi 1927 192	type 3a
Galloway	Wilson 1863 461	(two)
Cromdale, Moray	Wilson 1863 460	
Poolewe, Ross	PSAS xiv 1880 45	NMA D020 (bronze)

High Drummore, Wigt	PSAS xxix 1895 8	NMA FE72
North Scotland	Wilson 1863 460-1	
Scotland	PSAS xxxii 1898 240	NMA FE64 type 3a
Scotland	Wilson 1863 461	(bronze)

TRIANGULAR-SECTIONED GOLD ORNAMENTS

Balmashanner, Angus	PSAS xxvi 1892 182	NMA DQ158-161
prob Torloisk, Mull	PSAS lxviii 1934 191	NMA FE80
Whitefarland, Arran	PSAS lvii 1923 314	Kelvingrove
prob nr Dumbarton	PSAS iii 1860 24	NMA FE6
Traprain Law, E.Loth	Burley 1956 T30	NMA (bronze)
nr Biggar, Lanarks	PSAS lxxxi 1947 191	NMA FE85
Gogar House, Midloth	PSAS vi 1866 311	NMA FE7
Monzie, Perths		NMA loan
Glenluce, Wigt	PSAS lvii 1923 316	

RING-MONEY

Balmashanner, Angus	PSAS xxvi 1892 182	NMA DQ155-157
Torostan, Coll, Argyll	PSAS lvi 1922 17	NMA D038
Fuaraig Glen, Banffs	Childe,1935 163	BM WG23
Galloway	PSAS xxvi 1892 213	NMA FE58
Skye	Wilson 1863 455-6	NMA FE9
Covesea, Moray	PSAS lxv 1931 177	NMA (eight)
		Elgin Mus (two)
Crieff, Perths		NMA D014
Monzie, Perths		NMA loan
Scotland		NMA ?FE73

DRESS-FASTENERS

prob Torloisk, Mull	PSAS lxviii 1934 191	NMA FE81
Monzie, Perths		NMA loan

RIBBON TORCS

Cothill, Belhelvie, Aberds	PSAS xxxviii 1904 11	NMA FE66
Cothill, Belhelvie, Aberds	PSAS lxiii 1929 22	NMA FE73
Overshill, Belhelvie, Ab	PSAS i 1854 13	NMA FE33
Overshill, Belhelvie, Ab	PSAS xxvii 1893 371	NMA FE59
Belhelvie, Aberds	Callander 1923 165	
Tiree, Argyll	Wilson 1863 455	

Argyll	Wilson 1863 466	
nr Dunfermline, Fife	Wilson 1863 455	
Lower Largo, Fife	PSAS xviii 1884 233	NMA FE53-56
Galloway	Wilson 1863 465-6	probably two
Leys, Culloden, Invern	Wilson 1863 163	?ribbon torc
Coulter, Lanarks	PSAS l 1916 16	NMA FE75
nr Douglas Water, Lanarks	Wilson 1863 466	two
The Law Farm, Morayshire	PSAS ii 1857 530	NMA FE35,36,37,38, 38A (bronze),67,68,77,plus two recent acquisitions; BM 57.7-25.1,58.3-20.1-3, WG12-14; Elgin Mus 1888.10; ?Hunterian; ?Kelvingrove; others private collections.
?Crieff, Perthshire		private coll, Bear's Den
Rannoch Moor, Perths	PSAS xviii 1884 233	NMA FE32 cast
Little Lochbroom, Ross	PSAS iii 1860 363	NMA FE34
Stoneykirk, Wigt	Ayr & Wigt Coll v 1885 38	
other torcs		
Scotland		Kelvingrove (plain rod)
Slateford, Edinburgh		NMA cast (Tara type)
Glentrool, Kirkcud	PSAS lv 1921 29	NMA DQ248 (bronze)
NECKLETS		
Braes of Gight, Aberds	PSAS xxv 1891 133	NMA DQ275-277 (three)
Wester Ord, Ross	PSAS lix 1925 113	NMA DQ271
CAST BRONZE BOWLS		
Ardoe, Aberds	Abercromby ii 1912 21	
Balmashanner, Angus	PSAS xxvi 1892 182	NMA DQ132
CROSS-HANDLED BOWL		
Adabrock, Lewis, Ross	PSAS xlv 1911 27	NMA DQ220-221
TRUMPET		
Innermessan, Wigt	PSAS xxiii 1889 224	NMA DO27
HARNESS		
Horsehope Craig, Peebles	PSAS lxxxvii 1953 175	NMA casts Peebles Mus

MOULDS

? Cromar, Aberds	-	IV spearhead
	-	NMA CM22 cast
Culter, Aberds	sandstone	IV spearhead
	-	Ashmolean 1927/27
Loanhead of Daviot, Ab	clay	sword
	PSAS lxx 1936 300 NMA	
Aberds	steatite	IV & V spearheads
	PSAS lx 1926 19	NMA CM31
Campbeltown, Argyll	steatite	IV spearhead, leaf blade
	PSAS lxxxi 1947 171 NMA CM2-6	
Kildalton, Islay	clay	fragments
	-	-
Ardrossan, Ayr	mica schist	sock.axe
	-	Ashmolean 1927/2725
Traprain Law, E.Loth	clay	spear, sword, lunate spear
	PSAS liv 1920 80, lvi 1922 213 NMA	
Orkney	steatite	palstave
	PSAS xliii 1909 10 NMA CM25	
Rosskeen, Ross	-	sock.axes
	PSAS lxxii 1938 157 NMA casts	
Eildon Hills, Roxb	-	palstave
	PSAS lvii 1923 142	
Jarlshof, Shetland	clay	axe, gouge, sword, pin
	Hamilton 1956	NMA
Strathnaver, Sutherland	steatite	V spearhead
	PSAS xl 1906 129	NMA CM39
Glengyre, Wigt	sandstone	palstave or anvil
	PSAS lvii 1923 105 NMA CM29	
Little Dunagoil, Bute.	clay	rib and pellet axe

APPENDIX ii - HOARDS

Why is there no note here that the hoards are arranged by counties alphabetically. Not-coastwise.

Moss of Achmaleddie, New Deer, Aberdeenshire.

1. Bibliography:
(a) PSAS xxxii (1897-98) 8 - 10.
(b) PSA London 2nd series xxxi (1918-19) 150.
(c) PSAS lvii (1922-23) 146, (IV, 49).
(d) V.G. Childe, The Prehistory of Scotland (1935) 158.
(e) E. Sprockhoff, Zur Handelsgeschichte der germanischen Bronzezeit (1930) 5, 12, 20, 25.

2. Site:
The moss of Achmaleddie (Auchmaleddie), in the parish of New Deer, at the east end of the hill of Achmaleddie.

3. Circumstances of Find:
Found in May 1897 by George Littlejohn, Esq., son of the farmer of Mitchelhill Farm, Achmaleddie, when casting peats; acquired by the Nat. Mus. Ant. of Scotland in 1897. Treasure Trove.

4. Description of the Site:
The shields were found near the central part of a circular cup-shaped hollow of about 450 yards diameter, embedded in peat moss, about 4 feet below the present surface and about 5 feet above the blue clay at the base of the peat. A farmer cutting peat had removed 5 feet from the surface of the hollow in a previous year. Shield (2) lay upon shield (1).

5. Description of the Objects:
(1) Shield; 27½" diameter; central boss 4¼" diameter surrounded by 25 concentric embossed ribs alternating with 25 rows of small bosses; sheet bronze handle attached by rivets; rivets or holes on shield for attachments; central boss and part of shield damaged.

NMA DN4

(2) Shield; 18¼" diameter; central boss 4¾" diameter; repousse rib circles the boss, second rib runs near the outer edge of the shield; between these mouldings are four meander patterns, in repousse, two continuous and two ending in points; sheet bronze handle; rivets and holes for attachments.

NMA DN5

6. Comparisons:
(1) Scotland - Yetholm, Roxburghshire; Beith, Ayrshire.
England - Langwood, Cambs., Fox 1923, pl.viii; Thames, Sprockhoff 1930, taf. 2f.
Wales - Moel Siabod, Caernarvon, Grimes, 1951, 184 pl. VI.
Denmark - Sorup Mose, Broholm DBiii 181, M24.
(2) England - Coveney Fen, Cambs., Evans 1881, 346.

7. Dating:
The dating proposed for Yetholm-type shields is based upon their association (a) at Langwood Fen, Cambs., with an early form of spearhead, and (b) at Sorup Mose, Denmark, with a Punktbuckel-style shield dated to Montelius IV. The chronological horizon for Yetholm shields in north Britain may lie as late as the early eighth century B.C., but a date in the ninth century is preferred. The Coveney-type shield does not contradict this dating.

8. Observations:

9. Remarks:
Smith in (b) lists only one shield from Mitchelhill.
Sprockhoff in (e) lists two shields from Achmaleddie and Smith's from Mitchelhill, i.e. three in the hoard.

Braes of Gight, Aberdeenshire.

1. Bibliography:
(a) PSAS xxv (1890-91), 133, 135-8.
(b) PSAS lix (1924-25) 155-7.
(c) V.G. Childe, The Prehistory of Scotland, 1935, 163-5.
(d) J.G. Callander, PSAS lvii (1922-23) 146. (IV, 46).

2. Site:
At the foot of a precipice at the Braes of Gight, which overlook a valley of the River Ythan, on the march between the parishes of Methlick and Fyvie, Aberdeenshire.

3. Circumstances of Find:
Found by some workmen who were engaged in the construction of a private road from Haddo House to the Braes of Gight in 1866. An observer stated that the objects were found during the removal of some large fragments of rock. Exhibited to the Society of Antiquaries of Scotland on 9th February 1891 by the Earl of Aberdeen, and donated to the Museum by John Hamilton on 9th March, 1925.

4. Description of Site:
Beneath some large rocks at the foot of a precipice.

5. Description of the Objects, all of bronze.
(1) Penannular armlet, oval-sectioned body, terminals expanded outwards, maximum diameter $3\frac{1}{8}$".

NMA DQ 278

(2) Armlet like (1), maximum diameter $2\frac{7}{8}$".

NMA DQ 279

(3) Armlet like (1), but terminals only slightly expanded outwards, three grooves producing ribbed effect near terminals, maximum diameter $2\frac{3}{8}$".

NMA DQ 280.

(4) Armlet like (3) with grooving, maximum diameter $2\frac{3}{8}$".

NMA DQ 281.

(5) Armlet like (1), maximum diameter $2\frac{3}{4}$".

NMA DQ 282.

(6) Armlet like (1), maximum diameter $2\frac{3}{4}$", broken.

NMA DQ 283.

(7) Annular rings, three in number, two joined by a thin band of bronze, diameter of rings 2". Original report (a) shows two bands joining the rings, only one band now survives (b).

NMA DQ 284.

(8) Razor, bifid type, length $3\frac{1}{2}$", no perforation.

NMA DQ 285.

(9) Necklet, penannular, maximum diameter $6\frac{3}{4}$", rings in holders at swollen terminals, 18 holders lie around the circular rod each with ring (one now missing) of $\frac{3}{4}$" diameter.

NMA DQ 275.

(10) Necklet, penannular, maximum diameter $7\frac{1}{8}$", rings in holders at swollen terminals.

NMA DQ 276.

(11) Necklet, like (10), maximum diameter $6\frac{1}{4}$", terminals slightly different.

NMA DQ 277

6. Comparisons:
(1-2, 5-6) Rehill, Aberdeenshire; Balmashanner, Angus; Auchtertyre, Morayshire; Covesea, Morayshire; Wester Ord, Ross; Proudfoot's Type 2 (1955).
(3-4) Auchtertyre and Covesea, Morayshire.
(7) Danzig, Sprockhoff 1956, 17, taf 71, 1; also see Childe 1935, 165, 1929 344, fig. 203; Gallia XV iii 1957, 76, fig. 13 ? Ribiers.
(8) Isle of Harty, Kent. Inv. Arch. GB 18, 28;
Feltwell Fen, Norfolk, GB 35, 13; PBS xii, 1946, 127.
(9-11) Ziemitz group, Sprockhoff 1930, taf. 34, 1956 taf. 25, abb 38.

7. Dating:
The Ziemitz-type necklets are dated by Sprockhoff to late Montelius V or early VI, probably c.700 B.C., and the Type 2 and 2a bracelets, of Late Urnfield analogies, fall readily in this Scottish LBA_3.

8. Observations:

9. Remarks:

Brawland, Aberdeenshire.

1. Bibliography:
(a) PSAS lxxii (1937-38) 69.

2. Site:
Brawland, Aberdeenshire.

3. Circumstances of Find:
Unknown. Donated to Museum by Capt. H.P. Lumsden of Auchindoir, Clova, Aberdeenshire, 1938.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 22", blade width 1½", one rivet hole in each shoulder, two in tang, cast ribs on tang.
DL 59

(2) "Several more" swords.

6. Comparisons:
(1) Arch. Ael. 4 X 1933 185 Ewart Park type; Stoke Ferry, Norfolk, GB 8, 2; Thenford Hill, Northants., GB 12, 2; Meldreth, Cambs. GB 13, 1; Grassieslack, Aberdeenshire; Shuna, Argyll.

7. Dating:
Probably not before Scottish LBA_3, from 700 B.C.

Grassieslack Farm, Daviot, Aberdeenshire.

1. Bibliography:
(a) PSAS xli (1906-07) 128.
(b) PSAS xlvii (1912-13) 450-2.
(c) PSAS lvii (1922-23) 144. (IV, 22).

2. Site:
The farm of Grassieslack, in the parish of Daviot, Aberdeenshire.

3. Circumstances of Find:
(1) Found in the autumn of 1906 by the farmer's son while cutting roads for the reaping machine, the scythe contacting a part of the sword that projected from the ground.
(2) Found in March 1913, by the same worker while engaged in sowing operations, the plough having turned it up out of the soil within a few feet of the spot where the sword was found.

4. Description of the Site:
A field on the farm of Grassieslack.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 20½", maximum blade width 1¾", hilt missing.
(2) Socketed axe, length 3⅛", sub-rectangular body, moulding at mouth, thinner moulding below, three ribs on faces.

6. Comparisons:
(1) Arch. Ael 4 X 1933, 185 ; Stoke Ferry, Norfolk, Inv. Arch. GB 8 1; Shuna, Argyll.
(2) Bell's Mills, Edinburgh; Bagmoor, Lincs., Inv. Arch. GB 23 11.

7. Dating:
In Scottish LBA3, from 700 B.C.

Haddo House, Methlick, Aberdeenshire.

1. Bibliography:
(a) PSAS xxii (1887-88) 362.
(b) PSAS lvii (1922-23) 144; (IV, 27).

2. Site:
A peat moss near Haddo House, Methlick, Aberdeenshire.

3. Circumstances of Find:
Found in 1858; the one remaining sword was presented to Alexander Thomson of Banchory by the Earl of Aberdeen in 1858, and has an engraved inscription to this effect. In 1888 one sword reposed in the Museum in the Library of the Free Church College, Aberdeen, founded by Thomson.

4. Description of Site:
A peat moss.

5. Description of the Objects - of bronze.
(1) Sword, leaf-shaped, 25" long, with one rivet hole in each shoulder and two in the hilt.
(2) Three other swords, now untraceable.

6. Comparisons:
Arch. Mel 4 X 1933, 185.

7. Dating:
Probably in Scottish LBA3, from 700 B.C.

Overshill, Belhelvie, Aberdeenshire.

1. Bibliography:
(a) PSAS lvii (1922-23)165.

2. Site:
Overshill and Cothill Farms, Belhelvie Parish, Aberdeenshire.

3. Circumstances of Find:
Found in the 19th century, at different times; the two farms are adjoining, and it is possible, but not certain, that all the torcs came from a single hoard. Four torcs acquired by the National Museum.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Gold torc, twisted ribbon type, $2\frac{1}{2}$" diameter, rectangular-sectioned hook, found 1871, NMA 1893, Overshill. FE 59

(2) Gold torc, like (1). NMA 1851, Overshill FE 33

(3) Gold torc, like (1), diameter 4".
NMA 1928, Cothill FE 73

(4) Gold torc, like (1), diameter $3\frac{1}{2}$", fine fillet
found 1835, NMA 1903, Cothill FE 66

(5) Fragments of gold torc, Belhelvie Parish.

6. Comparisons:
(1-5) The Law Farm, Morayshire; Lower Largo, Fife.

7. Dating:
Possibly as early as tenth century, B.C.

Rehill, Premnay, Aberdeenshire

1. Bibliography:
(a) PSAS i 1851-54, 138.
(b) PSAS ix 1870-72, 436.
(c) J. Evans, Ancient Bronze Implements 1881, 382.
(d) J. Anderson, Scotland in Pagan Times: Stone and Bronze Ages 1885, 160.
(e) J.G. Callander, PSAS lvii 1922-23, 144. (IV, 6).

2. Site:
The farm of Rehill (Redhill), near the Hill of Benachie, in the parish of Premnay, Aberdeenshire. Br. Nat. Grid.

3. Circumstances of Find:
Not known. One of nine axes and two of "various" bronze rings presented to the Museum on February 14, 1853, by John Stuart, Esq., Advocate, Aberdeen.

4. Description of the Site:
Not known.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{1}{4}$", sub-rectangular mouth, hexagonal body section, collar.

NMA DQ 72

Eight other "celts" belong to this hoard, now untraceable.

(2) Penannular armlet, maximum diameter $2\frac{1}{2}$", D-sectioned rod, terminals expand outwards.

NMA DQ 70

(3) Penannular armlet, maximum diameter $2\frac{3}{4}$", round-sectioned rod, terminals expanded all around.

NMA DQ 71

Various other bronze rings belong to this hoard, but are now untraceable.

6. Comparisons:
(1) Barr Mor, Argyll; Cullerne, Morayshire; Horsehope, Peeblesshire; Bagmoor, Lincs., Inv. Arch. GB 23, 24-27.
(2) Gight, Aberdeenshire; Balmashanner, Angus; Proudfoot's Type 2 (1955).
(3) Balmashanner, Angus; Orrock, Fife.

7. Dating:
The Type 2 armlet dates this hoard to the Covesea phase of Scottish LBA3, from 700 B.C.

Ythsie, Tarves, Aberdeenshire.

1. Bibliography:
(a) J.M. Kemble, Horae Ferales, 1863, 161-162, pl. IX 4, 12.
(b) PSAS vi 1864-66, 312.
(c) PSAS xxvii 1892-93, 349-352.
(d) PSAS lxxxii, 1947-48, 308.
(e) PSAS lvii 1922-23, 146. (IV, 40).
(f) J. Evans, Anc. Bronze Implements (1881), 290, 304, 372, 465.
(g) J. Anderson, Scotland in Pagan Times: The Bronze and Stone Ages (1886), 141-142.
(h) British Museum, Bronze Age Guide (1920), 101, fig. 105.

2. Site:
The farm of Ythsie, in the parish of Tarves, Aberdeenshire.

3. Circumstances of Find:
Unknown. Part of the hoard presented to the British Museum by the Earl of Aberdeen.

4. Description of the Site:
Unknown.

5. Description of the Objects, all of bronze.
(1) Sword, leaf-shaped blade, length 23", maximum blade width 1¾", cast bronze hilt plate and detachable pommel, midrib.
BM 58, 11-15, 2-3.
(2) Sword, leaf-shaped blade, length 25", maximum blade width 1¾", large rivet hole in each shoulder, slot in tang, midrib.
BM 58, 11-15, 1.
(3) Sword, now lost.
(4) Chape, tongue-shaped, length 5⅜", with perforation, slightly damaged.
BM 58, 11-15, 4.
(5) Pin, length 8⅞", disc head 1⅜" diameter set parallel to stem, sunflower head, swan's-neck stem.
BM 58, 11-15, 5.
(6) Pin, like (5), now lost.

6. Comparisons:
(1) Grosvenor Crescent, Edinburgh; Cherwell, Evans 1881, fig. 349; Alnwick Castle 1880, pl. XVII, 4, pl. XVIIa, 1.
(2) Kilconan, Argyll; Grosvenor Crescent.
(4) Cauldhame, Angus; Kilconan, Argyll; Wilburton, Cambs., Fox 1923, pl. X.
(5) Orrock, Fife; Grosvenor Crescent; see Petersen 1929, 102-

7. Dating:
The Tarves hoard is dated by its swan's-neck sunflower pin to the second phase of Scottish LBA_4, centred around 500 B.C.

Balmashanner, Angus.

1. Bibliography:
(a) PSAS xxvi (1891-92) 174, 182-188.
(b) PSAS lvii (1922-23) 144 (IV, 5).

2. Site:
The farm of Balmashanner, near Forfar, Angus.

3. Circumstances of the Find:
Found when ploughing, about February 1892. Part of the hoard sent to the National Museum of Antiquities by John Knox, esq., "on behalf of the Crown", and part by the Queen's Remembrancer. Treasure Trove.

4. Description of the Site:
Unknown.

5. Description of the Objects, all of bronze unless otherwise noted.
(1) Socketed axe, fragmentary, oval-sectioned mouth.
NMA DQ 131

(2) Penannular armlet, maximum diameter 2⅜", D-sectioned rod, terminals expanded all around.
NMA DQ 134

(3) Penannular armlet, like (2).
NMA DQ 135

(4) Penannular armlet, maximum diameter 2½", D-sectioned rod, plain terminals rounded off but not expanded.
NMA DQ 136

(5) Penannular armlet, like (4) but terminals are expanded outwards.
NMA DQ 137

(6) Penannular armlet, like (5).
NMA DQ 138

(7) Penannular armlet, like (4).
NMA DQ 139

(8) Penannular armlet, maximum diameter 2¾", like (5).
NMA DQ 140

(9) Penannular armlet, maximum diameter 2¾", like (2).
NMA DQ 141

(10) Penannular armlet, like (9).
NMA DQ 142

(11) Penannular armlet, maximum diameter 2⅞", like (2).
NMA DQ 143

(12) Penannular armlet, like (11).
NMA DQ 144

(13) Ring, iron, diameter 1½".
NMA DQ 133

(14) Ring, (bronze), diameter ¾", oval-sectioned rod.
NMA DQ 145

(15) Ring, diameter 13/16th", circular-sectioned rod.
NMA DQ 146

(16) Ring, diameter ⅞", like (15).
NMA DQ 147

(17) Ring, diameter 1", like (14).
NMA DQ 148

(18) Ring, diameter 1⅛", like (14).
NMA DQ 149

(19) Ring, diameter 1⅜", like (14).

NMA DQ 150

(20) Ring, diameter 1¾", like (14).

NMA DQ 151

(21) Ring, diameter 3⅛", D-sectioned rod.

NMA DQ 152

(22) Ring, diameter 3¼", flattened rod.

NMA DQ 153

(23) Ring, diameter 3½", like (22).

NMA DQ 154

(24) Penannular ring, cast bronze core wrapped with thin beaten gold, maximum diameter ⅝".

NMA DQ 155

(25) Ring like (24), diameter ¾".

NMA DQ 156

(26) Ring like (25), diameter ⅞".

NMA DQ 157

(27) Penannular ornament, triangular section, of thin beaten gold, diameter 1", six-piece type.

NMA DQ 158

(28) Ornament like (27), diameter 15/16th".

NMA DQ 159

(29) Ornament like (27), diameter 1", decoration on faces of incised lines in panels.

NMA DQ 160

(30) Ornament like (27) but fragmentary, probably 1½" diameter.

NMA DQ 161

(31) Cast bronze bowl, nearly semi-globular, mouth diameter 4", height 3¾", damaged in casting.

NMA DQ 132

(32-57) Amber beads, flattened ends, various sizes, lengths ⅛" - ¾", diameters 5/16th" - 1".
(58-62) Jet or albertite beads, various sizes, lengths 7/32nd" - 9/32nd", diameters 7/16th" - ½", flattened ends.

(63) Pottery sherds; according to (a) "shaped like the usual cinerary urns ...., flat bottomed, and with a conical under part like an ordinary flower-pot, but considerably thicker in the sides and bottom, and coarser in texture". Base diameter 4", medium grits, some large grits, red-buff exterior, dark encrusted interior, flaky surface, wall ½" thick.

NMA DQ 193.

6. Comparisons:

(1) Kalemouth, Roxburghshire.
(2-3)(9-12) Rehill, Aberdeenshire; Alloa, Clackmannan and Ormidale, Arran, in gold.
(4)(7) Duff House, Banffshire, in gold; Covesea, Morayshire, HM 64.
(5-6, 8) Rehill, Aberdeenshire; Conage, Inverness; Covesea, Morayshire HM 65; Gight, Aberdeenshire DQ 282-3.
(13) iron in LBA contexts: Hawkes 1957, 161, Colchester; Wilts. Arch. Mag. xlvii, 1936, 484, Boscombe Down East; PPS i 1935, 36, Plumpton Plain.
(14-23) Monmore, Perthshire; Grosvenor Crescent; Kelton, Kirks;

(24-26) Covesea, Morayshire; Armstrong 1933, pl. xiv.
(27-30) Torloisk, Mull; Whitefarland, Arran; Armstrong 1933, pl. xviii; Proudfoot 1955 list.
(31) Ardoe, Aberdeenshire, Abercromby 1912, ii, 21, pl. cviii 0.7; Auh V v 1911, 133, fig. p. 140.
(32-57) Glentrool, Kirkcudbrightshire; Adabrock, Lewis, Macwhite 1944a.

7. Dating:
The cast bronze bowl and Type 2 bracelets are Late Urnfield objects from the Middle Rhine area, and form an important part of the Covesea complex of north-east Scotland, dated from 700 B.C.

8. Observations:

9. Remarks:
Original notice (a) 174 stated that the amber beads numbered 28, and also counted two broken rings as penannular armlets.
Original report (a) 182 numbered 11 penannular objects, 8 rings and 2 broken rings (one of iron), also 28 amber and 5 jet beads.
Callander (b) 144-5 counted 12 penannular armlets, 10 bronze rings, 31 amber and 4 jet beads.
In Museum at present are 11 penannular armlets, 10 bronze rings and 1 iron ring, 26 amber beads and 5 jet beads.

Castlehill, Forfar, Angus.

1. Bibliography:
(a) PSAS ii (1854-57) 63, 65.
(b) PSAS xix (1884-85) 78-79.
(c) J. Anderson, Scotland in Pagan Times. The Bronze and Stone Ages (1886) 160-162.
(d) PSAS lvii (1922-23) 144 (IV, 9).

2. Site:
Near the Castlehill of Forfar, Angus.

3. Circumstances of Find:
Found about 1835 by workmen in the course of digging a drain near the reputed site of the Castle of King Malcolm Canmore, at Forfar; donated to the National Museum of Antiquities by Andrew Jervise, Esq., of Brechin, on March 12th, 1855.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length 4¾", moulding at mouth, four grooves and mouldings encircle the mouth at loop top, twelve-sided body section.
NMA DQ 79
(2) Socketed axe, length 3½", rectangular mouth and body, moulding at mouth with slighter moulding below at loop top.
NMA DQ 80
(3) Socketed axe; length 3", sub-rectangular section, wide recurved cutting-edge.
NMA DQ 81
(4) Socketed axe, length 3", sub-rectangular section with moulding at mouth, thinner moulding below at mid-loop.
NMA DQ 82
(5) Spearhead, leaf-shaped blade, length 6½", traced decoration on socket (two groups of three lines).
NMA DQ 78

6. Comparisons:
(1) Traprain Law, East Lothian, 1922.231 Ha 6; Bell's Mills, Edinburgh, DE 18 unlooped.
(2) Citadel, Leith; Auchtertyre, Morayshire; Bagmoor, Lincs. Inv. Arch. GB 23, 15-17.
(3) Ballimore, Argyll; Great Freeman St. Nottingham GB 22 10.
(4) Husabost, Skye; Adabrock, Lewis.
(5) Bagmoor, Lincs. GB 23, 4, 8; Thorndon, Suffolk, GB 11 1.

7. Dating:
All the types represented here are normally part of hoards dating from 700 B.C., but the similarity between axes from Traprain Law and Castlehill (1) suggest that this hoard dates to the fifth century B.C.

Cauldhame, Brechin, Angus.

1. Bibliography:
(a) PSAS i (1851-54) 181, 224-5.
(b) PSAS vi (1864-66) 312.
(c) PSA London 2nd series V (1870-73) 427.
(d) J. Evans, Ancient Bronze Implements (1881), 290.
(e) J. Anderson, Scotland in Pagan Times. The Bronze and Stone Ages (1886) 144-145.
(f) PSAS lvii (1922-23) 146. (IV, 39).

2. Site:
Cauldhame or Cauldinghame estate, the property of Lord Panmure, near Brechin, Angus.

3. Circumstances of Find:
Unknown. Discovered around 1853 on the lands of Cauldhame. The find consisted of four swords, one spearhead, one chape, and the donation to the Society of Antiquaries of Scotland in December 1853 (by the Lords Commissioners of Her Majesty's Treasury) was composed of two swords and the chape. (c) records the exhibition by Greenwell at the Society of Antiquaries of London of two swords, one from Brechin, one from Leuchland, Angus. Evans (d) records two hoards, two Hallstatt swords from Leuchland owned by Greenwell, and the sword-spear-chape hoard from near Brechin. However it is a possibility that the two (Hallstatt) swords at the British Museum (Greenwell Coll.) are the missing two from the Cauldhame find. The balance of evidence suggests that this is not the case, as the NMA swords are Ewart type, the Greenwell swords Hallstatt, and presumably these would have been split up differently. The similarity in composition of this hoard to that from Kilconan supports the suggestion that all of the Cauldhame swords were Ewart.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Spearhead, leaf-shaped blade, rivet holes.
(2) Sword, leaf-shaped blade, length 21¾", maximum blade width 1⅝", one rivet hole in each shoulder, two in tang which is broken. NMA DL 8
(3) Sword, like (2) length 23¾", two holes in each shoulder, three in tang. NMA DL 10

(4-5) Swords, now lost.
(6) Chape, tongue-shaped, length 5⅞", perforated. NMA DL 9

6. Comparisons:
(1-6) Composition like Kilconan, Argyll, hoard.
(1) Ballimore, Argyll; Sleat, Skye; Thenford Hill, Northants, Inv. Arch. GB 12.
(2-5) Arch Ael 4, x, 1933, 185, Ewart Park type; Ballimore, Argyll; Heathery Haugh, Kincardineshire; Sleat, Skye.
(6) Tarves, Aberdeenshire; Wick Park, Somerset, Evans 1881, fig. 368.

7. Dating:
All of the objects fall readily within Scottish LBA3 from 700 B.C. although the tongue-chape occurs in an earlier horizon elsewhere (Fox, 1923, pl. x). The Late Ewart swords are not seen in an earlier phase however.

Denhead, Coupar Angus.

1. Bibliography:
(a) Arch. Scotica V 1890, app. p. 19.

2. Site:
At Denhead, in the parish of Coupar Angus.

3. Circumstances of Find:
The spearhead was found along with a short sword which was broken by the boys who discovered them. Spearhead presented to Society of Antiquaries by George Kinloch of Kinloch, December 10, 1832.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Spearhead, leaf-shaped blade, length 19", angular socket, lunate openings and perforations in blade.

NMA DG 1

(2) Sword, leaf-shaped blade, "short".

6. Comparisons:
(1) Crieff, Perthshire; Glen Clova, Angus; NM Ireland W 88; E. Evans 1933, 197- map 197; Lindenschmit 1889 taf xlvii 30; Breuil 1903 511, fig. 5, 39
(2) Aird, Lewis; NM Ireland.

7. Dating:
The lunate spearhead has its origin in the Wilburton complex of Scottish LBA2, but the finds can't be dated with certainty to this phase. The short sword confirms the assignation of the Denhead hoard to LBA3, from 700 B.C.

Forfar, Angus.

1. Bibliography:
(a) PSAS xxiii (1888-89), 15.
(b) PSAS lvii (1922-23), 146 (IV, 43).

2. Site:
At Forfar, Angus.

3. Circumstances of Find:
Unknown. Purchased by N.M.A. in 1888.

4. Description of Site:
Unknown.

5. Description of the objects:
Both probably of bronze.
(1) Socketed axe, single looped, sub-rectangular socket at mouth, with plain octagonal body widening to cutting edge; length $3\frac{7}{8}$", width across cutting face $2\frac{1}{2}$".

NMA DQ 129

(2) Socketed knife, oval socket at mouth (1" x $\frac{3}{4}$") extending 2" into body, two rivet holes in same plane as blade. Blade 2" wide at base, crescentic outline at juncture with socket, slight midrib; length $6\frac{7}{8}$", blade broken at top.

NMA DQ 130

6. Comparisons:
(1) Kalemouth, Roxburghshire; Cullerne, Morayshire; Bagmoor, Lincs., Inv. Arch. GB 23, 26.
(2) Near Campbeltown, Argyll, Wilson 1863, 390, fig. 65; Thorndon, Suffolk, Inv. Arch. GB 11, 2; Hodges 1956, 38 - Dungiven type; see also Brailsford 1947, 175, for similar blade-socket junction.

7. Dating:
Probably in Scottish LBA3, from 700 B.C. Both objects may be Irish in origin, certainly in inspiration.

Gallow Hill, Angus.

1. Bibliography:
(a) J. Anderson, Scotland in Pagan Times. The Bronze and Stone Ages (1886) 211.

2. Site:
Near Gallow Hill, between Tarry Mills and Marywell village, in the parish of St. Vigeans, Angus.

3. Circumstances of Find:
Found in digging a drain, about 1845; sold to a pedlar as "old drawer-handle", and probably melted down.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1-5) Five penannular gold armlets, with expanded terminals.

6. Comparisons:
(1-5) Ormidale, near Brodick, Arran: Coul, Islay; Alloa, Clackmannan.

7. Dating:
Probably in Scottish LBA3, from 700 B.C., when Irish connections were well developed.

Glen Clova, Angus.

1. Bibliography:
PSAS forthcoming. XC 1956-57 223-

2. Site:
Acton (Atton) in Glen Clova, eleven miles from Auchnacree near Glenogil, eleven miles from Redhall south of Cortachy, Angus.

3. Circumstances of Find:
Unknown at present. To NMA as Treasure Trove, 1959. (see 1.)

4. Description of Site:
Unknown. (see 1.)

5. Description of Objects:
(1) Sword, leaf-shaped blade, length 21½", maximum blade width 1¼", two rivet holes in each shoulder and two in tang. NMA
(2) Spearhead, leaf-shaped blade, length 12¾", lunate openings in wings, beadings. NMA
(3) Spearhead, leaf-shaped blade, length 12½", lunate openings in wings, perforation in each wing below lunate, beadings. NMA

6. Comparisons:
(1) Ballimore, Argyll; Heathery Haugh, Kincardineshire.
(2)(3) E. Evans, 1933, 197- :
Highfield, Ross; Denhead, Angus; Dunstaffnage Collection at NMA

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Leuchland, nr. Brechin, Angus.

1. Bibliography:
J. Evans, 1881, 289, fig. 352.

2. Site:
At Leuchland, Brechin, Angus.

3. Circumstances of Find:
Unknown. 19th c. Donated to B.M. by Greenwell.

4. Description of Site:
In a moss.

5. Description of the objects:
(1) Sword, leaf-shaped blade, length 26¼", maximum blade width 1¼", two rivet holes in each shoulder, two in tang, six wire rivets, hooked butt.

BM WG 1238

(2) Sword, leaf-shaped blade, length 26" but lacking tang, three rivet holes in each shoulder.

BM WG 1237

6. Comparisons:
(1-2) normal British Hallstatt type in bronze; e.g. J. Evans 1881 fig. 344, Newcastle.

7. Dating:
In Scottish LBA, from the late seventh century B.C.

Ballimore, Cowal, Argyll

1. Bibliography:
PSAS lxxvii (1942-43) 184.

2. Site:
Garden of Ballimore House, about one mile south of Otter Ferry, Loch Fyne, Argyll.

3. Circumstances of Find:
Found when excavating an ornamental pond in the garden of Ballimore House; owned by Capt. MacRae, proprietor of Ballimore.

4. Description of Site:
The garden of Ballimore House.

5. Description of the Objects:
(1) Socketed axe, length 2⅞", width across cutting edge 1⅝", oval socket, narrowing to oval-sectioned waist, thence widening to cutting-edge, single loop broken away, casting seam.
(2) Socketed axe, length 2 13/16ths", width across cutting edge 1⅞", otherwise generally similar to (1).
(3) Socketed axe, length 2¼", width across cutting edge 1⅝", otherwise generally similar to (2).
(4) Socketed axe, length 2½", width across cutting edge 1 7/16ths", otherwise similar to (1).
(5) Socketed axe, length 3", width across cutting 1 15/16ths", otherwise similar to (2), although loop intact.
(6) Socketed axe, length 3 13/32", cutting edge damaged, single loop, generally similar to (2), mouth damaged.
(7) Socketed axe, length 3 1/16", width across cutting edge 2", single loop, otherwise similar to (2), mouth damaged.
(8) Socketed axe, length 3 3/16", width across cutting edge 2", ¾" collar below slightly everted oval mouth; octagonal section below extending and widening into cutting edge which is damaged, single loop, casting seam.
(9) Spearhead, socketed, leaf-shaped blade, length of blade 8¾", maximum width 1¾", shallow groove runs parallel to the rounded midrib socket on each side, broken at blade base and near point.
(10) Spear-head, socketed, fragment of blade 7½" long, rounded midrib socket.
(11) Spear-head, socketed, leaf-shaped blade 8¼" long and of 2⅛" maximum width, broken at blade base.
(12) Spear-head, socketed, leaf-shaped blade 11" long, broken at base and top, nearly quadrangular-sectioned socket, midrib, beside which is a 3/16" wide groove on either side; this reduces blade thickness to ⅛"; beside grooves are mouldings or ribs increasing blade thickness to¼", blade edges damaged.
(13) Spear-head, socketed, leaf-shaped blade 11¼" long, broken at both ends, edges also damaged, midrib socket of nearly quadrangular section, bordered by grooves and then by ribs as in (12).
(14) Spear-head, socketed, leaf-shaped blade 11¼" in length, blade 8" long, broken at point, rivet-holes 3/16" diameter on socket, on each side three ribs begin here, one merging with blade edge and others follow along the junction of the blade and the rounded midrib socket, bevelled blade edges.

(15) Spear-head, socketed, elongated leaf-shaped blade with lunate openings, now broken, socket broken at blade base, length 13¼", maximum width 3¼", cast ribs run along sides of the rounded midrib socket and completely outline the lunate openings which are 3¾" long, casting seam.
(16) Sword, leaf-shaped blade, straight shoulders, slight swelling in grip outline, blade has slightly rounded midrib, one rivet-hole in each shoulder and one in grip bordered by slight flanged edges, total length 22¼", point broken, maximum width of blade 1 7/16th".
(17) Sword, leaf-shaped blade, straight shoulders, slight swelling in grip outline, blade has slightly rounded midrib, one rivet-hole in the surviving shoulder, slight flanges on grip, length 20¼", base of grip and point broken, maximum width of blade 1 7/16th".
(18) Cast bronze tube, fragmentary, 18¼" long; thickness 1/16" to 3/32"; one end intact, roughly circular and 1⅝" diameter; just below the rim are four perforations ¼" diameter nearly symmetrically arranged opposite one another; from this the tube tapers to 1 3/32" diameter at the other broken end; tube is bent slightly; cast corrugations ⅜" to 7/16" wide.

6. Comparisons:
(1-7) Kalemouth, Roxburghshire; Great Freeman Street, Nottingham Inv. Arch. GB 22, 9-10; Dalduff, Ayrshire.
(8) Horsehope, Peebles; Gillespie, Wigtownshire; Bagmoor, Lincs. Inv. Arch. GB 23, 24-27.
(9-14) Stoke Ferry, Norfolk, Inv. Arch. GB 8 6-8; Thenford Hill, Northants GB 12 3-4; Torran, Argyll; Auchtertyre, Morayshire; Inshoch, Nairn.
(15) Glen Clova, Angus; Highfield, Ross; E. Evans 1933, 197-
(16-17) Cauldhame, Angus; Heathery Haugh, Kincardineshire; Stoke Ferry, Norfolk GB 8 1 - 2.
(18)

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Near Campbeltown, Argyll.

1. Bibliography:
(a) PSAS vi (1864-66) 48. pl. VI.
(b) Evans (1881) 437-438.
(c) Anderson (1886) 185-186.
(d) PSAS lxxxi (1946-47) 171-172.

2. Site:
Near Campbeltown, Kintyre, Argyll.

3. Circumstances of the Find:
Found c. 1864 while breaking up old ground near Campbeltown.
Exhibited and presented to the Museum, 1864, by Dr. Arthur Mitchell.

4. Description of the Site:
Nothing further known.

5. Description of the Objects:
(1) Mould, of serpentine, length 7", width 1¾", for casting looped and leaf-bladed spearhead, two valves. CM

(2) Mould, of serpentine, length 7½", width tapers from 2" to 1", two valves; on one pair of faces are matrices for casting looped and leaf-bladed spearhead, on other pair are matrices for casting small oval tanged blade. CM

(3) Stone axe, of clay ironstone, smooth polished, length 7", width 3" across face. AF 67

(4) Stone axe, of clay ironstone, smooth polished, length 3½", width 2½" across face. AF 68

Coul, Islay, Argyll.

1. Bibliography:
J. Anderson, Scotland in Pagan Times. The Bronze and Stone Ages 1886, 213.

2. Site:
The farm of Coul, on the island of Islay, Argyll.

3. Circumstances of Find:
Found when ploughing, in 1780. Letter to Society of Antiquaries of Scotland stated that all were melted down except one, which was in the possession of a "gentleman on the island".

4. Description of Site:
Unknown.

5. Description of the Objects:
(1-36) Penannular armlets, gold, diameter of circular rod $\frac{1}{8}$", expanding to $\frac{1}{4}$" at terminals.

6. Comparisons:
Glen Aray, Argyll; Gallow Hill, Angus; Ormidale, Arran.

7. Dating:
Probably in Scottish LBA3, from 700 B.C.

8. Observations:

9. Remarks:
Sketch of armlet accompanied the letter to the Society.

The Fort, Craignish, Argyll.

1. Bibliography:
PSAS lxi (1926-27) 107-108.

2. Site:
On a hillock near the old church (ruined) at The Fort, Craignish, Argyll.

3. Circumstances of Find:
Unknown. Presented to the National Museum of Antiquities, 1927, by Jas. Beveridge, Esq.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length 3¼", sub-rectangular socket and body, wide recurved cutting-edge.
NMA DE 94
(2) Spearhead, leaf-shaped blade, length 4⅛", rivet holes.
NMA DG 70

6. Comparisons:
(1) Castlehill, Angus; Husabost House, Skye; Highfield, Ross; Great Freeman Street, Nottingham Inv. Arch. GB 22, 9.
(2) Heathery Haugh, Kincardineshire; Torran, Argyll; Ballimore, Argyll; Reach Fen, Cambs. GB 17, 4.

7. Dating:
Probably in Scottish LBA3, from 700 B.C., but possibly slightly earlier.

Glenaray, Argyll.

1. Bibliography:

2. Site:
In Glenaray, Inveraray, Argyll.

3. Circumstances of Find:
Unknown. At Inverarary Castle.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Gold armlet, penannular, with terminals expanded all around.
(2) Gold ornament, penannular, with wide trumpet terminals set nearly in the same plane.
(3) Gold ornament, like (2).

6. Comparisons:
(1) Armstrong 1933, pl. xvii; Coul, Islay; Gallow Hill, Angus.
(2-3) Armstrong 1933, pl. xv; Sunderland, Argyll; Whitefarland, Arran; Galloway.

7. Dating:
Not before Scottish LBA3, from 700 B.C., when Irish influence and contacts were strong.

Islay, Argyll.

1. Bibliography:
(a) PSAS xvi (1881-82) 409.
(b) PSAS lvii (1922-23) 144. (IV, 20).

2. Site:
Islay.

3. Circumstances of Find:
Unknown; purchased for National Museum, 1882.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Socketed axe length 3¾", everted trumpet mouth below which the body is octagonal in section, single loop, socket mouth damaged. NMA DQ 47.
(2) Socketed axe, length 3½", oval socket mouth, parallel sides oval-sectioned body widening irregularly to cutting edge, single broken loop, socket mouth damaged. NMA DQ 48
(3) Spearhead, socketed, leaf-shaped blade, length 6¼", blade damaged, loops on socket near blade base, incised line at socket mouth, casting seam, round socket midrib. NMA DQ 46
(4) Chisel, flanged in same plane as blade. NMA DQ 49
(5) Halberd. NMA

6. Comparisons:
(1) Horsehope, Peebles; Ballimore, Argyll; Bell's Mills, Edinburgh; Bagmoor, Lincs. Inv. Arch. GB 23, 24-27.
(2) Ballimore, Argyll; Dalduff, Ayrshire; Great Freeman Street, Nottingham, GB 22 9-10.
(3) Burgesses' Meadows, Oxford. GB 6, 1-2; Inshoch Wood, Nairn, Callander, Perthshire.
(4) NMA DC 41; Kintore, Aberdeenshire; South English winged adzes may be related, Ant. J. xxxiii, 1953 204; Inv. Arch. GB 38, 5.
(5) see O'Riordain, Arch. lxxxvi 1937, 202-203; Stoke Ferry, Norfolk, Inv. Arch. GB 8, 4.

7. Dating:
A founder's hoard, dating not much before Scottish LBAz, possibly however in the eighth or late ninth century B.C. The halberd is a survival, probably old when deposited (see Stoke Ferry, Norfolk, for similar case).

Kilconan, Argyll.

1. Bibliography:
(a) PSAS xix (1884-1885) 12-14, 328.
(b) PSAS lvii (1922-23) 146. (IV, 38).

2. Site:
Kilconan Moss, 6 miles from Campbeltown, Kintyre, Argyll.

3. Circumstances of Find:
Unknown. Drawings of hoard exhibited to Soc. of Antiquaries of Scotland 1884, by Lady Constance Campbell through Dr. Arthur Mitchell, the hoard being at Inverarary Castle. The drawings were presented to the Society in 1885. In 1920, J.G. Callander appended a note to the proceedings (a) viz, "Another find of six bronze swords was discovered at Killconane Moss six miles from Campbeltown, Kintyre, in Ap. 1907, now in possession of the Duke of Argyll. See Minutes of Council, Ap 16th 1907. As Lady Constance Campbell's drawings have the name Kilconan in them there seems to have been only one hoard. J.G.C. 20/4/20 ". The exhibition of 1952 at the National Museum brought together two swords, two swan's-neck sunflower pins and a flesh-fork, and these were considered as forming another hoard. However the records at Inverarary Castle do not permit such an association, and the two swords are seen to belong to the original and only Kilconan hoard, which contains seven swords, a spearhead and a chape.

4. Description of the Site:
Nothing further known.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 24", maximum blade width 1⅞", one rivet hole in each shoulder, two in tang.
(2) Sword, like (1), length 25½", width 1⅞".
(3) Sword, like (1), length 21¾", width 1¾", but two rivet holes in tang.
(4) Sword, like (3), length 25⅛", width 1⅞".
(5) Sword, blade only, length 17", width 1¾".
(6) Sword, length 16", width 1¼", two rivet holes in each shoulder, tang absent.
(7) Sword, like (1), length 25½", width 1¾", but three rivet holes in tang.
(8) Spearhead, leaf-shaped blade, length 12½", rivet holes in socket.
(9) Chape, tongue-shaped, length 6¾", perforation.

6. Comparisons:
(1-7) Arch. Ael. 4, x, 1933, 185, Ewart Park type; Shuna, Argyll; Cauldhame, Angus; Heathery Haugh, Kincardineshire.
(8) Cauldhame, Angus; Ballimore, Argyll; Heathery Haugh, Kincardineshire; Bagmoor, Lincs. Inv. Arch. GB 23, 2.
(9) Cauldhame, Angus; Tarves, Aberdeenshire; Wilburton, Cambs., Fox 1923 pl. x; Wick Park, J. Evans, 1881, fig. 368.

7. Dating:
Not before Scottish LBA3, from 700 B.C. The composition of this hoard is similar to that of the Cauldhame, Angus, hoard.

Shuna, Argyll.

1. Bibliography:
(a) PSAS xi (1874-76) 121.
(b) PSAS xiii (1878-79) 332.
(c) J. Anderson (1886), 155.
(d) PSAS lvii (1922-23) 146; (IV, 35).

2. Site:
A moss on the island of Shuna, Argyll.

3. Circumstances of Find:
Found c. 1875 "in digging a ditch through peaty soil, within a short distance of each other, at some depth below the surface, and all sticking vertically in the peat with the points downwards, as if they had been designedly thrust in, and not casually lost" (a).
(1) Presented to Society of Antiquaries of Scotland, 1875, by Robert Thomson of Shuna.
(2) Presented to Kelvingrove Museum by Thomson, c. 1875.
(3) Presented to St. Andrews Museum by Thomson, c. 1875.

4. Description of Site:
Nothing further known.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 21", maximum blade width $1\frac{1}{2}$", one rivet hole in one shoulder, two in other shoulder, one hole surviving in broken tang, dimples. NMA DL 21
(2) Sword, like (1), length $25\frac{3}{8}$", width $1\frac{7}{8}$", one rivet hole in each shoulder, two in tang. Kelvingrove 774-28
(3) Sword, like (1), length $23\frac{1}{2}$", width $1\frac{3}{4}$", one rivet hole in one shoulder, two in other, two in tang, dimples. St. Andrews Museum.

6. Comparisons:
(1-3) Arch. Ael. 4 X 1933 185, Ewart Park type;
Grassieslack, Aberdeenshire; Kilconan, Argyll; Iochdar, South Uist; Grosvenor Crescent; Thenford Hill, Northants Inv. Arch. GB 12, 1-2.

7. Dating:
Possibly before Scottish LBA3, perhaps in the eighth century B.C., but equally as probable in the seventh or sixth century.

Southend, Kintyre, Argyll.

1. Bibliography:
(a) PSAS iv (1860-62) 396.
(b) Evans (1881) 136.

2. Site:
Parish of Southend, Kintyre, Argyll.

3. Circumstances of Find:
Treasure Trove, 1862.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length 3½", square section, double moulding, four vertical bars. NMA DE 8

(2) Greenstone axe, length 7", width 3". AF 15

(3) Sandstone axe, length 6", width 2¼". AF 16

(4) Felstone axe, length 3¼", width 2". AF 96

Sunderland, Islay, Argyll.

1. Bibliography:
Wilson, 1863, 461-2.
Anderson, 1886, 64-5.

2. Site:
Near Sunderland House, on the estate of the late Walter Campbell, Esq., on the island of Islay, Argyll.

3. Circumstances of Find:
Found in 1838 in levelling and draining new ground for agricultural purposes. The objects were found beside a cist which contained "several rude cinerary urns", the whole lying underneath a prostrate stone. (2) carried off by a "dishonest servant".

4. Description of Site:
Nothing further known.

5. Description of the Objects:
(1) Penannular ornament, gold; following dimensions approximate only (based on scale of "about one-fourth" and measurements of illustration): U-shaped rod with widely flared trumpet-terminals, terminals 2¾" diameter, inner edges 4⅛" apart, terminals face away slightly from each other, inner surface decorated with two incised concentric lines, circular-sectioned rod wider at centre than near ends.
(2) "Armilla ..... made from a broad band of gold beaten out so as to form a convex centre, on each side of which was a fluted ornamental border, and a raised rim returned at the edge ..... the bracelet was large enough to encircle a woman's arm above the elbow".

6. Comparisons:
(1) Glenaray, Argyll; Whitefarland, Arran; Poolewe, Ross (in bronze); list in Proudfoot 1955; Irish dominance, see Armstrong 1933, pl XV.
(2) ? like Inv. Arch. GB 25, 2 or GB 26, 3-4.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Torloisk, Mull, Argyll.

1. Bibliography:
PSAS lxviii, 1933-34, 191-2.

2. Site:
Probably on the Torloisk estates, Mull, Argyll.

3. Circumstances of Find:
Unknown. Presented to the National Museum.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Penannular gold ornament, hollow triangular section, diameter $2\frac{1}{2}$", two main face plates formed of gold wires soldered together, weight 18 dwts. 15 grs. NMA FE 80
(2) Bow-shaped dress fastener, gold, flat oval terminals, deep grooves decorate sides and top of bow, panel decoration on outer edges of bow near terminals, weight 1 oz. 7.22 grs. NMA FE 81
(3) Sun disc, copper, cast from wax model, gold foil covering, diameter $2\frac{7}{8}$", concave-convex section, convex surface decorated with concentric dot and circles, broken stud on concave surface. NMA FE 82.
(4) Wooden box.

6. Comparisons:
(1) Monzie, Perthshire; Balmashanner, Angus; for Ireland see Armstrong 1933, pl. xviii; Proudfoot, 1955.
(2) for Ireland see Armstrong, 1933, pl. xiv; Monzie, Perthshire;
(3) Huntisgarth, Orkney, sun disc but decoration dissimilar NMA EQ 126-130; decoration recalls Loch Broom sunflower pin with swan's-neck NMA DO 50 of late sixth or fifth century date; for Ireland see Armstrong 1933, pl. xix; the western discs may be related to Scandinavia (i.e. Lattoon and Trundholm), but must be later than Montelius II.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Torran, Ford, Argyll

1. Bibliography:
(a) PSAS xviii (1883-84) 179, 207-209.
(b) PSAS xix (1884-85) 53.
(c) Anderson, 1886, 149.
(d) PSAS lvii (1922-23) 144; (IV, 14).

2. Site:
At foot of Craigbeoch, on Torranbeg farm, at south end of Loch Awe, Argyll.

3. Circumstances of Find:
Found in spring 1881, by T.O.Richmond, tenant of the farm, while digging for a ferret lost among fallen rocks at the foot of Craigbeoch. (1) exhibited by Henry Bruce , 1884, to the Society. (2) and (3) exhibited by Jas. M. Strachan in 1884, and donated to the Museum in 1885.

4. Description of Site:
Among loose stones at the base of a rabbit hole. Strachan stated 6' down, Bruce reported not much over 2' down.

5. Description of the Objects:
(1) Spearhead, leaf-shaped blade, length 12", rivet holes, beading.
(2) Spearhead, length 10¼", leaf-shaped blade, rivet holes.
NMA DQ 116
(3) Socketed gouge, length 3", collar around socket mouth.
NMA DQ 117

6. Comparisons:
(1) Thenford Hill, Northants. Inv. Arch. GB 12, 3-4; Ballimore, Argyll; Sleat, Skye.
(2) Bagmoor, Lincs. GB 23, 2-3; Ballimore, Argyll; Auchtertyre, Morayshire.
(3) Reach Fen, Cambs. GB 17, 31; Brogyntrn, Shropshire, Grimes 1951, fig. 68, 1-2; Alnwick Castle, 1880, pl. xva, 2.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Dalduff, Kilkerran, Ayrshire.

1. Bibliography:
(a) Archaeological and Historical Collections of Ayr and Wigton, iv, 1884, 50-51.
(b) Archaeological and Historical Collections of Ayrshire and Galloway, vii, 1894, 5.
(c) PSAS xiii (1878-79) 332.
(d) J. Anderson, Scotland in Pagan Times. Bronze and Stone Ages, 1886, 153-154.
(e) PSAS xxxvii (1902-03) 178.
(f) PSAS lvii (1922-23) 144; (IV, 19).

2. Site:
The farm of Dalduff, near Crosshill, Kilkerran, Ayrshire, on the estate of Sir Charles D. Ferguson.

3. Circumstances of Find:
Found in 1846 by workmen engaged in draining a field on Dalduff farm. About three feet below the surface of the ground they discovered a "pot", without lid or cover, but with two sword fragments placed over its mouth, and a small hoard of bronze objects inside. The workmen disposed of the relics but eventually the proprietor, Sir Charles D. Ferguson, managed to recover some of the objects and presented them to the Museum in June, 1846. A fourth socketed axe, said to be a part of this hoard, was presented to the Museum in 1903 by Robert Munro. A note from James Ferguson, Esq., of Kilkerran, in 1956, stated that " about half a dozen axe-heads and an arm-ring", then and now at Kilkerran, had always been presumed to be a part of the great hoard of 1846. These objects, five socketed axes, some incomplete, and part of a cauldron handle, show evidences of a bronze founder's work, but there is no definite evidence that they belong to the original hoard. However it is not unreasonable to assume that all the objects came from a single find, as in 1846 most of the objects were dispersed and it is certain that some escaped detection by Sir Charles Ferguson.

4. Description of Site:
Nothing further known.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{1}{4}$", octagonal body section, moulded mouth with slight moulding below. NMA DQ 92
(2) Socketed axe, length $2\frac{3}{4}$", like (1). NMA DQ 93
(3) Socketed axe, length $3\frac{3}{8}$", rectangular section, moulded mouth, second moulding below, three vertical ribs. NMA DQ 98A
(4) Socketed axe, length $3\frac{1}{8}$", octagonal section, moulded mouth, slight moulding below. NMA DQ 94
(5) Sword, two fragments, length $9\frac{1}{4}$", tang, angular midrib. NMA DQ 95-96.
(6) Cauldron staple and ring, holder with five grooves, bronze strengthening rod. NMA DQ 97
(7) Cauldron staple and ring, like (6). NMA DQ 98
(8) Socketed axe, square section, two mouldings, three vertical ribs.

(9) Socketed axe, oval section, wide blade.
(10) Socketed axe, square section, two mouldings.
(11) Socketed axe, square section, two mouldings.
(12) Socketed axe, square section, two mouldings.
(13) Ring, slightly flattened, casting ridge on inner and outer sides.

6. Comparisons:
(1-2, 4) Bagmoor, Lincs, Inv. Arch. GB 23, 24-27; Ballimore, Argyll; Bell's Mills, Edinburgh; Kalemouth, Roxburghshire.
(3, 8) Bagmoor, Lincs., Inv. Arch. GB 23, 11-13; Horsehope, Peebles: Grassieslack, Aberdeenshire; Kalemouth, Roxburghshire.
(9) Great Freeman Street, Nottingham, GB 22, 9-10; Ballimore, Argyll; Highfield, Ross.
(10-12) Bagmoor, Lincs. Inv. Arch. GB 23, 15-18; Citadel, Leith; Auchtertyre, Morayshire; Highfield, Ross.
(5) Broholm, DB IV 28; Sprockhoff 1952a, map 3; this type of sword is commin in IV, but occurs also in V; the earlier form has a narrow, more rectangular tang-section as has this Dalduff specimen.
(6-7) probably (13) see Hawkes 1957, 182; Scotland NMA DU 4.

7. Dating:
The Class A2 cauldron staples date this hoard to the mid-seventh century B.C., in Scottish LBA3. The sword fragments must have been old when deposited, and this, with the third ring, confirm that Dalduff is a founder's hoard, as the bronze drips on some axes have already suggested.

Luggtonrigge Farm, Beith, Ayrshire.

1. Bibliography:
(a) PSAS v (1862-64) 165.
(b) PSAS xxvii (1892-93) 355-356.
(c) J. Evans, Ancient Bronze Implements (1881) 347-349.
(d) D. Wilson, Prehistoric Annals of Scotland, vol. I (1863) 397-8.
(e) R. Munro, Prehistoric Scotland (1899) 198-200.
(f) Archaeological and Historical Collections of Ayr and Wigton, vol I (1878) 66-69.
(g) J. Anderson, Scotland in Pagan Times, The Bronze and Stone Ages (1886) 155-158.
(h) R. Smith, PSA London 2nd series, xxxi (1918-19) 150.
(i) PSAS lvii (1922-23) 146; (IV, 47).
(j) E. Sprockhoff, Zur Handelsgeschichte der germanischen Bronzezeit (1930) 5, 12.

2. Site:
The farm of Luggtonrigge, near Giffin Castle, in the parish of Beith, 10-12 miles from Ayr, 4 miles from Irvin, Ayrshire.

3. Circumstances of Find:
Found in 1779 or 1780 when labourers were casting peats on the farm, owned by Mr. Storie of Paisley. There apparently were 5 or 6 shields and had been regularly placed to form a ring. Mr. Storie recovered one of the shields, the others having been disposed of by the finders; this shield was presented to the Society of Antiquaries of London by Dr. Ferris on November 17, 1791 (Minute Book of Soc. Ant. vol xxiv, 147).

4. Description of Site:
Found 6 or 7 feet below the surface of a peat moss.

5. Description of the Objects:
(1) Shield; diameter 26¾"; central boss 4⅜" diameter; surrounding the boss are 29 concentric embossed ribs alternating with 29 rows of small bosses; sheet bronze handle attached by rivets; rivets placed on shield to hold small tongue or button, one of which survives.
Mus. Soc. Ant.
(2) Shields, four or five in number, now lost.

6. Comparisons:
(1-2) Scotland: Achmaleddie, Aberdeenshire; Yetholm, Roxburghshire.
England: Thames, Sprockhoff 1930 taf 2f.
Wales: Moel Siabod, Caernarvon. Grimes 1951, 184, pl. vi.
Denmark: Sorup Mose, Broholm DB iii, 181, M24.

7. Dating:
Probably in the ninth century B.C., possibly as late as early eighth century (see dating for Achmaleddie, Aberdeenshire, shields).

8. Observations:

9. Remarks:
Original account states only "regularly placed in a ring"; later reports state "on their edges, so as to form a circle".

Duff House, Banff.

1. Bibliography:
(a) Arch. Scotica iv (1857) 298, pl. xii.
(b) Wilson (1863), 331, 413, 452.
(c) PSAS xvii (1882-83) 446-7.

2. Site:
Near Duff House, on the estate of the Earl of Fife, Banffshire.

3. Circumstances of the Find:
Communication of the find was made to the Society of Antiquaries of Scotland in June, 1828, by E.W.A. Drummond Hay, but the original account has been lost. The objects were presented to the Museum of the Society by the Earl of Fife in 1832.

4. Description of Site:
An engraving in (a) shows the urn in an inverted position resting on a "stone cover"; burnt bones were found in the pot along with the gold objects.

5. Description of the Objects:
(1) Penannular armlet, gold, diameter $2\frac{5}{8}$", D-sectioned rod, plain terminals, weight 1oz. 14 grs.
NMA EQ 120
(2) Penannular armlet, gold, like (1) but terminals are very slightly expanded and weight is 1 oz. 5 dwts. 14 grs. due to heavier rod.
NMA EQ 121
(3) Penannular ring, gold, oval shape $\frac{7}{8}$" x $\frac{1}{2}$", single rod of oval section.
NMA EQ 122
(4) Penannular ring, gold, nearly circular, diameter 9/16th", formed of three round-sectioned rods joined together.
NMA EQ 123
(5) Penannular ring, gold, nearly circular, diameter 7/16th", formed of six round-sectioned rods joined together.
NMA EQ 124
(6) Two fragments of thin bronze, one with part of a rivet hole.
(7) Urn, coarse clay, much grit, flat rim. NMA EQ 125

6. Comparisons:
(1-2) Armstrong 1933, pl. xviii, 370, 376.
(3-5) Stroma, Harris.
(6) ? razor of C.M. Piggott's Class I (1946).
(7) possibly Covesea Ware, possibly Cinerary Urn.

7. Dating:
Nothing in the Duff House find need be of Late Bronze Age; the gold bracelets however, if of Irish gold, suggest a date in LBA3, and the pottery, if of Covesea Ware, dates to this time as well.

Fortrie of Balnoon, Inverkeithny, Banffshire

1. Bibliography:
PSAS i (1851-54) 138.

2. Site:
A cairn on the hill of Fortrie of Balnoon, Inverkeithny parish, Banffshire.

3. Circumstances of Find:
Found when digging into the cairn. Presented to the Museum of the Society of Antiquaries of Scotland, February 1853, by John Stuart.

4. Description of Site:
A cairn.

5. Description of the Objects:
(1) Semi-tubular ring, diameter 1½". NMA DQ 101
(2) Socket of ? gouge, faulty casting, prominent seams. NMA DQ 100
(3) Button, diameter 1 1/16th", moulded effect, two loops joined to flat band on reverse. NMA DQ 99
(4) Penannular object, fragment only, length 2", flattened rod, terminal squared off and with grooved decoration of lines and criss-crosses. NMA DQ 102

6. Comparisons:
(1) Grosvenor Crescent, Edinburgh; larger from Monmore, Perthshire; Inshoch, Nairn; Great Freeman Street, Nottingham, Inv. Arch. GB 22, 16.
(2) Tynehead, Midlothian; Monmore, Perthshire; Essenside, Selkirkshire; Thorndon, Suffolk, Inv. Arch. GB 11, 3.
(3) Reach Fen, Cambs. Inv. Arch. GB 17, 26-27; Llangwyllog, Wales; Heathery Burn; see Savory, 1958, 41; All Cannings Cross.
(4)

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Kirk Hill, St. Abbs, Berwickshire.

1. Bibliography:
PSAS lxvi (1931-32) 26.

2. Site:
At the base of a cliff under the Kirk Hill, St. Abbs, Berwickshire, on the estate of Lord Amulree.

3. Circumstances of Find:
Found 3rd May, 1931; acquired by the National Museum through the King's and Lord Treasurer's Remembrancer.

4. Description of Site:
At foot of a cliff.

5. Description of the Objects:
(1) Penannular armlet, gold, diameter $2\frac{3}{4}$", D-sectioned rod, terminals expanded all around, weight 3 oz. 2 dwt. 20 grs. FE 78
(2) Penannular armlet, gold, diameter $2\frac{1}{2}$", thin D-sectioned rod, terminals expanded mainly outwards, weight 14 dwt 20 gr. FE 79

6. Comparisons:
(1) Alloa, Clackmannanshire; Ormidale, Arran.
(2) Ormidale, Arran; Alloa, Clackmannanshire.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Ormidale, Arran.

1. Bibliography:
(a) PSAS v (1862-64) 214-215.
(b) PSAS lvii (1922-23) 319-320.

2. Site:
Ormidale, near Brodick, Arran.

3. Circumstances of Find:
Found when digging a drain about 1864. Presented to the Museum by the Lords of Her Majesty's Treasury, 8th February 1864. Treasure Trove.

4. Description of Site:
Unknown.

5. Description of the Objects:
(1) Penannular armlet, gold, oval section, terminals expanded all around. FE 10
(2) Penannular armlet, gold, D-section, terminals expanded outwards. FE 11
(3) Penannular armlet, gold, round section, terminals expanded outwards, slightly inwards. FE 12
(4) Penannular armlet, gold, thin round section, terminals slightly expanded with irregular grooves in line around outside. FE 13

6. Comparisons:
(1) Proudfoot's Type 1; Kirk Hill, Berwickshire; Alloa, Clackmannanshire.
(2) Type 2; Kirk Hill, Berwickshire; Alloa, Clackmannanshire.
(3) Type 2 tendency; Kirk Hill, Berwickshire.
(4) Type 1; Kirk Hill, Berwickshire.

7. Dating:
Not before Scottish LBA_3, from 700 B.C.

Whitefarland Farm, Arran.

1. Bibliography:
(a) PSAS lvii (1922-23) 314-320.

2. Site:
65 yards south of farm of Whitefarland, Kilmory Parish, on north-west coast of Arran.

3. Circumstances of Find:
(1) Found about 25th February 1921, by Finlay Kerr, Esq., son of the farm's owner, while searching for building-stones; sent to A. Stewart, Esq. Jeweller, of Buchanan Street, Glasgow; now at Kelvingrove Museum.
(2) Found several weeks later by L. Mann, Esq., a few inches from the find-spot of (1); Kelvingrove Museum.

4. Description of the Site:
(1) found 2' under surface of ground, presumably underneath some slab of native schistoze rock lying in 25 foot raised beach, near the foot of sea-cliff.
(2) found in deposit of stones and hill-wash on raised beach gravel at foot of sea cliff.

5. Description of the Objects:
(1) Penannular ornament, gold, oval-sectioned rod, trumpet terminals, maximum width $3\frac{1}{2}$". Kelvingrove Museum.
(2) Penannular ornament, gold, hollow triangular section, diameter $1\frac{5}{8}$", three-piece. Kelvingrove Museum.

6. Comparisons:
(1) Glenaray, Argyll; Sunderland, Argyll; Poolewe, Ross in bronze; Proudfoot, 1955 list.
(2) Balmashanner, Angus; Torloisk, Mull; Monzie, Perthshire.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Hillhead Farm, Caithness.

1. Bibliography:
PSAS xlvii (1912-13), 433-435.

2. Site:
On Hillhead Farm, n-nw of Hillhead broch near Broadhaven, between the broch and Inkerman farm, near Wick, Caithness.

3. Circumstances of Find:
Found in February 1913, during ploughing; purchased by the National Museum 1913.

4. Description of the Site:
A small mound with an elevation of about two feet, made up of black earth, grey surface stones, and some slaty stones; the mound covers an area 78' by 30', maximum.

5. Description of the Objects, both of gold:
(1) Penannular armlet, diameter $2\frac{4}{8}$", circular-sectioned rod, terminals slightly expanded all around, weight 607 grs. FE 69
(2) Penannular armlet, diameter $2\frac{3}{8}$", like (1) weight 381 grs. FE 70
(3) Stone bowl, semi-globular, sandstone, dressed with small pointed tool, length $6\frac{3}{4}$", height 4". AQ 84

6. Comparisons:
(1-2) Proudfoot's Type 1; Alloa, Clackmannanshire; Ormidale, Arran; Coul, Islay.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Alloa, Clackmannanshire.

1. Bibliography:
(a) PSAS xvii (1882-83) 447.
(b) J. Anderson (1886) 63.

2. Site:
Along the old road leading from the Tontine to the Academy, Alloa, Clackmannanshire.

3. Circumstances of Find:
Found in March 1828 by workmen who were breaking up an old road in order to repair it. The armlets were found upon the top of a flat stone under which was an inhumation. Cinerary Urns were found nearby. The armlets were sold to a pedlar, eventually recovered by the Exchequer and presented to the National Museum of Antiquities.

4. Description of the Site:
Upon a huge stone slab covering an inhumation.

5. Description of the Objects:
(1) Penannular armlet, gold, diameter 3", round-sectioned rod, terminals expanded all around. EQ 118
(2) Penannular armlet, gold, diameter 3⅛", round-sectioned rod, terminals expanded outwards only. EQ 119

6. Comparisons:
(1) Kirk Hill, Berwickshire; Ormidale, Arran: Armstrong 1933 pl xvii; Proudfoot Type 1 (1955).
(2) Ormidale, Arran; Covesea, Morayshire in bronze; Type 2.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Cauldholme, Dumfries.

1. Bibliography:
PSAS lvii (1922-23) 146 (IV, 34).

2. Site:
Cauldholme, Drumlanrig, Dumfriesshire.

3. Circumstances of Find:
Unknown. Formerly preserved in Drumlanrig Castle. At present untraceable.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Sword, probably of Late Ewart type.

(2) Sword, like (1).

6. Comparisons:
(1-2) Cauldhame, Angus; Ballimore, Argyll; Heathery Haugh, Kincardineshire Druidstone, Perthshire; all with two Late Ewart swords.

7. Dating:
Probably from 700 B.C.

Greyfriars, Dumfries.

1. Bibliography:
(a) PSAS lx (1925-26) 27-31.

2. Site:
Greyfriars Church, Dumfries.

3. Circumstances of Find:
Found in 1866 when excavating for the foundations of Greyfriars church. The hoard was preserved in the Crichton Royal Institution, Dumfries, but subsequently disappeared. In 1925 three palstaves had been discovered at the Institution. Plaster casts of four palstaves and two spearheads exist in the Dumfries Burgh Museum with entry "Two Boxes of Bz. Spheads etc. (Casts) from the Originals in the Mus. of the Cr. Roy. Inst.". Institution possessed "two hatchets and one spearhead" before the finding of this hoard, and a later list showed "four axes and two spearheads" after the acquisition of the hoard. It is thereforenthought that the original hoard consisted of only two axes and one spearhead, none of which can be identified with certainty from the other unlabelled specimens.

4. Description of the Site:
Unknown.

5. Description of the Objects:
Unknown. See 3.

Dunbartonshire.

1. Bibliography:
(a) PSAS iii (1857-60) 24.
(b) Wilson (1863) 457.

2. Site:
In the West Highlands, probably near Dumbarton.

3. Circumstances of Find:
Unknown. Acquired by the Museum in 1857.

4. Description of the Site:
In peat moss.

5. Description of the Objects:
(1) Penannular armlet, gold, circular-sectioned rod, terminals expanded all around. NMA FE 4
(2) Penannular armlet, like (1). NMA FE 5
(3) Penannular ornament, gold, hollow triangular section. NMA FE 6.

6. Comparisons:
(1-2) Glenaray, Argyll; Alloa, Clackmannanshire; Proudfoot's Type 1.
(3) Balmashanner, Angus; Torloisk, Mull; Whitefarland, Arran; Monzie, Perthshire.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Bowerhouses, East Lothian.

1. Bibliography:
(a) Arch. Scotica iii (1831) 44.
(b) PSAS vi (1864-66) 357-371.
(c) PSAS x (1872-74) 439-440.
(d) PSAS lvii (1922-23) 146 (IV, 45).

2. Site:
At Bowerhouses, near Dunbar, East Lothian.

3. Circumstances of the Find:
Found during the levelling of some ground; communicated to the Society of Antiquaries 25th April, 1825; presented to the Museum 1827 by A. Seton, Esq.

4. Description of the Site:
Said to have been found in two urns, one about 18" high, the other small; burnt bone and charcoal accompanied the objects which were found when a "tumulus" was being levelled.

5. Description of the Objects:
(1) Socketed axe, length 3¼", sub-rectangular socket mouth, octagonal body, below collar. NMA DQ 69
(2) Razor, bifid, length 3¼", shallow groove in blade, notch, perforation. NMA DQ 68
(3) Razor, bifid, length 3¼", notch. NMA DQ 67
(4) Razor, bifid, length 2⅜", notch and perforation. NMA DQ 66

6. Comparisons:
(1) Horsehope, Peebles; Kalemouth, Roxburghshire; Bagmoor, Lincs. Inv. Arch. GB 23, 24-27.
(2-4) Feltwell Fen, Norfolk. Inv. Arch. GB 35, 13; C. Piggott, 1946, list 138.

7. Dating:
Probably not before Scottish LBA3, from 700 B.C.

Gospertie, Fife.

1. Bibliography:
(a) Small "Interesting Antiquities recently discovered in Fife" (Edinburgh) 1823.
(b) Anderson (1886) 147-148.

2. Site:
On the lands of Gospertie (Gospartrie, Gospetrie), on the farm of Wester Gospertie, at Pittenduich, Fife.

3. Circumstances of the Find:
Found 1822. One socketed axe donated to the Society of Antiquaries of Scotland by P. Skene, January 26th, 1829.

4. Description of the Site:
At the side of a large stone in a damp bog, found during ploughing.

5. Description of the Objects:
(1) Socketed axe, length 3¼", sub-rectangular section, two mouldings at socket mouth. NMA DE 33
(2) Socketed axe, collar, faceted section. (Small 1823).
(3) Spearhead, leaf-shaped blade, rivet-holes. (Small 1823).
(4) Palstave, looped, ledge-stop class. (Small 1823).
About a dozen other socketed axes, and half a dozen spearheads, make up the remainder of the hoard.

6. Comparisons:
(1) Dalduff, Ayrshire; Citadel, Leith; Auchtertyre, Morayshire; Highfield, Ross; East English type, GB 23, 15-18; GB 18, 14-16; GB 37, 23-31.
(2) Horsehope, Peebles; Bagmoor, Lincs. GB 23, 24-27.
(3) Stoke Ferry, Norfolk, GB 8; Great Freeman Street, Notts. GB 22, 12.
(4) Worthing, Sussex, GB 37; Caldonshill, Wigtonshire.

7. Dating:
Probably not before Scottish LBA3, from 700 B.C.

Lower Largo, Fife.

1. Bibliography:
(a) A. Way (1849) 53.
(b) PSAS xviii (1883-84) 233-235.
(c) J. Anderson (1886) 214-217.

2. Site:
The Temple, in the village of Lower Largo, on the estate of Mr. Dundas of Arniston, Fife.

3. Circumstances of the Find:
Found in the winter of 1848 among some earth that was due to be carted away. Presented by the National Museum by R. Dundas, Esq., 1883.

4. Description of the Site:
On the top of a steep bank which slopes down to the sea, among some loose earth, possibly 3' deep in sandy soil.

5. Description of the Objects:
(1) Gold torc, length 11$\frac{4}{8}$", ribbon, conical knobs, weight 7 dwt. 15 gr.
(2) Gold torc, length 11", weight 7 dwt 17 gr.
(3) Gold torc, length 10$\frac{3}{4}$", weight 8 dwt 2 gr.
(4) Gold torc, length 3", fragment, weight 54 gr.

6. Comparisons:
(1-4) The Law Farm, Morayshire; Armstrong 1933, pl. xiii.

7. Dating:
Possibly as early as the tenth century, although these and other northern gold torcs may date primarily to the Irish-Scottish gold phase or LBA3, from 700 B.C.

Orrock, near Burntisland, Fife.

1. Bibliography:
(a) Sir Robert Sibbald, Miscallanea Quaedam Eruditae Antiquitatis quae ad Borealem Brittaniae majoris Partem pertinent (1710).
(b) PSAS lxxxii (1947-48) 306-308.

2. Site:
A cairn in a field at Orrock, on the hills about a mile to the north of Burntisland, Fife.

3. Circumstances of Find:
Unknown.

4. Description of the Site:
A cairn.

5. Description of the Objects:
(Measurements based on Sibbald's probably full scale drawings).
(1) Pin of bronze, sunflower-type head, swan's-neck stem, concentric decoration.
(2) Amber bead, spherical, broken in half; slightly under 2 cm. in diameter, perforation $\frac{1}{2}$ cm. across.
(3) Penannular armlet, bronze, ext. diameter $5\frac{1}{2}$ cm., one terminal expanded all around, other terminal missing.
(4) Penannular armlet, similar to (3).
(5) Penannular armlet, similar to (3).
(6) Shale armlet (?) in two pieces, unillustrated; annular, perhaps 7 cm. ext diameter.
(7) Ring, bronze, $\frac{3}{4}$" diameter. Pierced by rectangular hole at side of rim (not outer edge), perforation 1 cm. long.
(8) Ring, bronze, $\frac{3}{4}$" diameter. Pierced by rectangular hole at side of rim (not outer edge) perforation 1 cm. long.
(9) Ring, bronze, $1\frac{1}{4}$" diameter.
(10) Ring, bronze, 1" diameter.

6. Comparisons:
(1) Tarves, Aberdeenshire; Grosvenor Crescent; Perth Museum.
(2) See MacWhite 1944a; Balmashanner, Angus; Adabrock, Lewis.
(3)-(5) Proudfoot's Type 1; Alloa, Clackmannanshire; Coul, Islay.
(7-8) Poolewe, Ross (larger).

7. Dating:
The group dates by its pin to the late sixth or fifth centuries B.C.

Galloway.

1. Bibliography:
(a) D. Wilson (1863) 461.

2. Site:
In a loch in Galloway.

3. Circumstances of Find:
Found when draining the loch in 1731.

4. Description of the Site:
Nothing further known.

5. Description of the Objects:
(1) Penannular ornament, gold, trumpet terminals, weight 15 oz.

(2) Penannular ornament, like (1), smaller and with cup ends covered by flat gold ovals.

6. Comparisons:
(1-2) Armstrong 1933, pl. xv; Glenaray, Argyll; Poolewe, Ross, in bronze; Whitefarland, Arran.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Achnahanaid, Skye.

1. Bibliography:
(a) Ant. J. xxxi (1951) 72, pl. xvb.

2. Site:
At Achnahanaid, Braes, Portree, Skye.

3. Circumstances of the Find:
Found in June 1946. Donated to the University Museum of Archaeology and Ethnology, Cambridge, by Mrs. C. Macintosh.

4. Description of the Site:
A peat bog; the objects were found in clay under 4-5 feet of peat, formerly even greater in depth.

5. Description of the Objects:
(1) Socketed axe, collar, faceted body extends into collar.
Univ. Camb. 48.1861a
(2) Socketed gouge, ribbing at socket mouth.
Univ. Camb. 48.1861b

6. Comparisons:
(1) Gillespie, Wigtownshire; general group Horsehope, Peebles; Bagmoor, Lincs. Inv. Arch. GB.23, 24-27.
(2) Wester Ord, Ross; Guilsfield, Wales, Grimes 1951 fig. 70, 10.

7. Dating:
Not before Scottish LBA_3, from 700 B.C.

Husabost House, Skye.

1. Bibliography:
(a) PSAS lxvii (1932-33) 312-313.

2. Site:
500 yards S-SW of Husabost House, Glendale, Skye.

3. Circumstances of Find:
Found c.1933 when a ferret was being dug out of a rabbit burrow. Presented to the National Museum 10th April, 1933, by Nicol Martin of Glendale.

4. Description of Site:
Nothing further known.

5. Description of the Objects:
(1) Socketed axe, length 3¾", sub-rectangular body, slight collar, recurved. NMA DQ 300

(2) Socketed axe, length 4¼", oval socket, decagonal-sectioned body, recurved. NMA DQ 301

6. Comparisons:
(1) Castlehill, Angus; Fort, Argyll; Highfield, Ross; Bagmoor, Lincs. Inv. Arch. GB 23, 15; Worthing, Sussex, GB 37, 28.
(2) Traprain Law; Castlehill, Angus.

7. Dating:
Probably in Scottish LBA3, from 700 B.C.

Iochdar, South Uist.

1. Bibliography:
(a) PSAS vi (1867-66) 252, 271.
(b) PSAS xiii (1878-79) 327.
(c) Evans, (1881) 289.
(d) PSAS lvii (1922-23) 146 (IV, 31).

2. Site:
On east side of main road leading to Iochdar in north-west corner of South Uist.

3. Circumstances of Find:
Notice given to the Society by Capt. F. Thomas in June, 1865, when one sword (2) was owned by Mr. MacRory, the other (1) by Capt. Thomas. Sword (1) presented to the Society in December 1865 by John Gordon of Cluny.

4. Description of Site:
Resting on boulder clay, at base of peat bed, 10-12 feet thick.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 27", rivet hole in each shoulder, two in tang, cast-on repair to grip. NMA DL 3

(2) Sword, like (1) but 24" length.

(3) Leather sheath, destroyed; also wooden handles for swords.

6. Comparisons:
(1) Stoke Ferry, Norfolk, Inv. Arch. GB 8, 1;
for repaired swords see H. Hodges, U.J.A. forthcoming;
Welby, Leicester, GB 24, 2.

7. Dating:
These Ewart Park swords generally date scarcely before Scottish LBA_3, from 700 B.C.

Point of Sleat, Skye, Inverness-shire.

1. Bibliography:
(a) PSAS iii (1957-60) 101-103.
(b) PSAS viii (1868-70) 310-311.
(c) PSAS lvii (1922-23) 144; (IV, 18).
(d) J. Evans (1881) 209, 289, 315.
(e) J. Anderson (1886) 145-146.
(f) D. Wilson (1863) 399-400.

2. Site:
Four miles from Armadale Castle, ½ mile from the coast, on the north side of the Point of Sleat, between the farms of Gillean and Achnacloich.

3. Circumstances of Find:
Found in autumn 1849 by a workman cutting peats. Objects (1), (2), (3) and (5) were in the possession of the Right Honourable Lord Macdonald of Armadale Castle until 1954 when they were loaned to the NMA. Object (4) was donated to the Museum in February, 1950, by H. McCulloch. The objects were found together with several pieces of oak boards about 1½" thick and about 2' long, and Wilson (f) claims that other objects were also recovered.

4. Description of the Site:
Peat bog.

5. Description of the Objects:
(1) Spearhead, leaf-shaped blade, length 7⅞", plain socket.
NMA Ll954.4
(2) Spearhead, leaf-shaped blade, length 7¾", socket expands into wings.
NMA Ll954.5
(3) Sword, leaf-shaped blade, length 22½", one rivet hole in tang, one imperforate dimple on each shoulder, and one in grip.
NMA Ll954.2
(4) Curved knife, socketed, blade 2¾" long, slight midrib on inner curve, rivet holes.
NMA DO 9
(5) Pin, cup-shaped head, collar below cup, length 10⅕".
NMA Ll954.3

6. Comparisons:
(1) Cullerne, Morayshire DQ 231; Knockadoo PRIA 36c 1921-24, 143-6; Murrayfield; Ballimore, Argyll.
(2) Class VB; Bagmoor Lincs. GB 23, 2-5; Great Freeman Street, Notts., GB 22, 12; Murrayfield.
(3) Grosvenor Crescent; Heathery Haugh, Kincardineshire; Meldreth, Cambs., GB 13, 3.
(4) Cullerne, Morayshire, DQ 233; Ireland, Hodges 1956, 36.
(5) Drumcullen, BM 54.7-14.168; Hodges 1956, 53 list; Heathery Burn BM.

7. Dating:
The cup-headed pin, curved knife, and narrow-bladed spearheads in the Sleat hoard point to an Irish source; their unused condition suggests a direct Ireland-Skye route, or manufacture in Skye by an Irish worker. Scottish LBA3, from 700 B.C.

Rigg, Skye.

1. Bibliography:
(a) PSAS xxi (1886-87) 9.
(b) PSAS lvii (1922-23) 146 (IV, 32).

2. Site:
Rigg, on the east side of Skye.

3. Circumstances of Find:
Found in March 1886, (2) by John Macvicar while digging out a rabbit, and (1) by Capt. William Stewart a few days later on excavating under a large stone 8' x 6' x 3' thick; apparently sword (1) had been moved down by rabbits burrowing under the stone. (2) purchased by the Museum in December 1886, and (1) presented to the Museum by Capt. Stewart in April, 1887.

4. Description of Site:
Large stone rested on smaller stones in such a way as to leave a large cavity underneath, and (1) was found here, resting on some small stones - it is inferred that (2) was found at lower level than (1) and not directly underneath the boulder.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 28¾", rough rivet-hole in each shoulder, two in tang, maximum blade width 2". NMA DL 37

(2) Sword, like (1) but length 26½", and more rounded rivet holes. NMA DL 38

6. Comparisons:
(1-2) Cauldhame, Angus; Ballimore, Argyll; Heathery Haugh and Jacksbank, Kincardineshire; Druidstone, Perthshire;
Arch Ael 4 X 1933, 185, Ewart Park type; Inv. Arch. GB 12, GB 13.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Strond, Harris.

1. Bibliography:
(a) J. Anderson (1886) 213-214.

2. Site:
A house at Strond, Harris.

3. Circumstances of Find:
Found in digging the foundations of a house. Acquired for the Museum from a jeweller to whom they had been sold as bullion, 1873.

4. Description of Site:
Nothing further known.

5. Description of Objects:
(1) Penannular ring, gold, terminals slightly expanded all around, round-sectioned rod, diameter 15/16th". NMA FE 14

(2) Penannular ring, gold, terminals slightly expanded all around, round-sectioned rod, diameter $1\frac{1}{8}$". NMA FE 15

6. Comparisons:
(1-2) Armstrong, 1933, pl. XVIII, 387, pl. XIV, 231-232; possibly ring money.

7. Dating:

Heathery Haugh, Kincardineshire

1. Bibliography:

2. Site:
The farm of Heathery Haugh, Glen Dye, Kincardineshire.

3. Circumstances of Find:
Found 21st July, 1951; donated to Montrose Museum by Jas. Brandie, 19 Queen Street, Montrose.

4. Description of theSite:
Nothing further known.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, broken, present length 16½", one rivet hole in each shoulder.

(2) Sword, leaf-shaped blade, broken, present length 12¾".

(3) Spearhead, leaf-shaped blade, length 10¼", rivet holes.

(4) Spearhead, leaf-shaped blade, length 11¾", rivet holes.

6. Comparisons:
(1-2) Arch. Ael. 4 X 1933, 185, Ewart Park type; Cauldhame, Angus; Ballimore, Argyll; Druidstone, Perthshire.

(3-4) Class V; Murrayfield, Edinburgh; Ballimore, Argyll.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Jacksbank Farm, Glenbervie, Kincardineshire.

1. Bibliography:
(a) PSAS xiv (1879-80) 316-317.
(b) J. Anderson (1886) 155.
(c) PSAS lvii (1922-23) 146 (IV, 28).

2. Site:
"the lower part" of Jacksbank farm, in the estate of Lawgavin, parish of Glenbervie, Kincardineshire.

3. Circumstances of the Find:
Found 30th April, 1880, by a workman digging a drain. The two swords were found in close proximity lying across the bottom of the drain. (2) was discovered first and was broken in the removal, with the tip being left behind apparently. Six $\frac{1}{2}$" rivets were seen in (1) but were lost in its removal. Presented to NMA by John Burnet, Esq., farmer of Jacksbank in 1880.

4. Description of Site:
At the bottom of a drain, "lying between the vegetable or mossy matter and a pearly bed of sand", three feet from the surface.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 26", two rivet holes in each shoulder and two in tang, flat thin tang with slight ribbing. NMA DL 18
(2) Sword, leaf-shaped blade, length 17$\frac{3}{4}$", at present, one rivet hole in each shoulder and two in tang. NMA DL 19

6. Comparisons:
(1-2) Arch. Ael. 4 X 1933, 185, Ewart Park type; Cauldhame, Angus; Rigg, Skye; Heathery Haugh, Kincardineshire; Dunsinane, Perthshire.

7. Dating:
Scottish LBA3, from 700 B.C.

Glentrool, Kirkcudbright.

1. Bibliography:
(a) PSAS lv (1920-21) 13, 29-37.
(b) PSAS lvi (1921-22) 20.
(c) PSAS lvii (1922-23) 134 (III, 2).

2. Site:
On Eshoncan Fell, north of Loch Trool, parish of Minnigaff.

3. Circumstances of Find:
Most of the objects found by Capt. W. Dinwiddie, 5th King's Own Scottish Borderers, in summer of 1915. A second razor (5) found some time later by Malcolm Scott, gamekeeper, Cumboden, and glass bead (14) and amber bead by Wm. Adams, Wood o'Cree, Newton Stewart. Capt. Dinwiddie noticed the spearhead which projected above the mossy ground. Presented to the National Museum by Capt. Dinwiddie and Malcolm Scott and Wm. Adams in 1921-22.

4. Description of the Site:
Under a large overhanging rock on Eschoncan Fell, embedded in stony peaty soil, over an area 3' x 2', at various depths down to 15" below the surface.

5. Description of the Objects:
(1) Palstave, length 6¾", high flanges turned over sunk-stop, midrib, wide blade. DQ 240
(2) Spearhead, leaf-shaped blade, length 9⅞", beading along midrib, protected loops at base of wings, four traced lines encircle socket mouth. DQ 239
(3) Rapier, length 15", maximum blade width 1¼". DQ 238
(4) Razor, length 4", slight midrib, narrow tang. DQ 242
(5) Razor, length 3¼", narrow tang. DQ 250
(6) Tanged knife, length 6¼", perforation at base of tang, broad flat blade, parallel sides. DQ 241
(7) Torc fragments, twisted bronze square-sectioned wire, 13 pieces, length 16¾". DQ 248
(8) Pin, circular disc head slightly domed, stem 6⅜" long, loop on stem 1½" below head, repaired loop. DQ 243
(9) Chisel or punch, length 3½", square section, tapered. DQ 244
(10) Chisel or punch, length 1¾", square section, tapered. DQ 245
(11) Chisel or punch, length 5⅛", square section, tapered. DQ 246
(12) Chisel or punch, length 3¼", square section, not tapered. DQ 247
(13) Bronze plate or pendant, 1" x ¾", two small oval perforations near one side. DQ 254
(14) Glass bead, 5/16th" diameter, flat globular shape, light blue. DQ 251
(15) Amber beads, ten flat discs, two cones, half of large disc, diameters ⅜" - 1 1/16th". DQ 249
DQ 255

6. Comparisons:
(1) Caldonshill, Wigtownshire, DQ 209.
(2) Liesbüttel, Sprockhoff, 1941, taf 36b; Stibbard Norfolk, Evans 1881, fig. 407; New Downie, Angus, DG 61.
(3) Maentwrog, Wales, Inv. Arch. GB 10, 3; Chatteris, Cambs., Evans 1881, fig. 315; Drumcoltran, Kirkcudbrightshire; ~~Traprain Law, East Lothian~~.
(4-5) Adabrock, Lewis, DG 219; Traprain Law, East Lothian.
(6) Monkswood, Somerset, Arch. lxxi, 1921, 138, pl. xi; for later version see Felixstowe, Suffolk, Inv. Arch. GB 16, 3.
(7) Kersten, 1936, 36ff, form 2; Monkswood, Somerset, Arch. lxxi, 1921, 138; Edington Burtle, Somerset, PSANHS v 1854, 91.
(8) Janssen, 1935, abb 5, abb 7; Bohm 1935, taf 10, 19, in Northern Europe; Ireland EM 91.4-20.5; Ashmolean 1927/2853.
(9-12) Traprain Law, East Lothian.
(13)
(14) Adabrock, Lewis.
(15) Balmashanner, Angus.

7. Dating:
The Glentrool hoard can hardly be dated later than the eleventh century, in view of its Montelius II and III analogies and relations with both the North and the Somerset region.

Kelton, Kirkcudbright

1. Bibliography:
(a) PSAS xix (1884-85) 327-8.
(b) PSAS lvii (1922-23) 146 (IV, 41).

2. Site:
In the glebe of Kelton, near Castle Douglas.

3. Circumstances of the Find:
Found in March 1885. The sword was broken by the workmen in removal, and the point was not recovered. Presented to the National Museum by The Rev. C.V. Cowan, minister of Morebattle, Kelso, on 8th June, 1885.

4. Description of the Site:
Two feet below the surface.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 17", point missing, three rivet holes in each shoulder, three in tang. DQ 118

(2) Ring, diameter $1\frac{3}{8}$", circular section, solid bronze. DQ 119

6. Comparisons:
(1) Arch. Ael. 4 X 1933, 185, Ewart Park type; Stoke Ferry, Norfolk, Inv. Arch. GB 8, 2; Thenford Hill, Northants, GB 12, 2.

(2) Grosvenor Crescent.

7. Dating:
Probably not before Scottish LBA_3, from 700 B.C.

Douglas Water, Lanarkshire.

1. Bibliography:
(a) D. Wilson (1863) 466.

2. Site:
Near the bridge over Douglas Water, Carmichael, Lanarkshire.

3. Circumstances of the Find:
Found in 1834 by quarrymen; in the Marquess of Douglas Collection 1863; now untraceable.

4. Description of Site:
Nothing further known.

5. Description of the Objects:
(1) Torc, gold.

(2) Torc, gold.

6. Comparisons:
(1-2) The Law Farm, Morayshire; Lower, Largo, Fife.

Stonehill, Lanarkshire.

1. Bibliography:
(a) PSAL 2 ii (1861-64) 401-3.
(b) Anderson (1886) 211-212.

2. Site:
Stonehill Wood, Douglas Estate, Carmichael parish, Lanarkshire.

3. Circumstances of Find:
Found 1834; exhibited to Society of Antiquaries of London 1864; exhibited at National Museum of Antiquities 1952, by Earl of Home; on loan to Kelvingrove Museum.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Penannular armlet, diameter 3", rectangular-sectioned rod, two flat gold bands wrapped around the armlet, terminals expanded square, total weight 5 oz 124 grs.
(2) Penannular armlet, rectangular-sectioned rod, rounded expanded terminals, weight 447 grs.
(3) Penannular armlet, diameter $2\frac{1}{2}$", rectangular-sectioned rod, rounded expanded terminals, two flat bands wrapped around armlet, also corrugated penannular ring, total weight 1 oz 14 grs.

6. Comparisons:
(1-2) Type 1 armlets; Downpatrick.
(3) Lozenge-sectioned armlets, Proudfoot 1955, 25ff; Downpatrick; bronze examples in Somerset hoards, Ebbesbourne, etc.

7. Dating:
Probably later than the Somerset hoards, possibly, in the North, Scottish LBA3, from 700 B.C., with Irish gold.

Arthur's Seat, east of Samson's Ribs, Edinburgh.

1. Bibliography:
(a) D. Wilson, Prehistoric Annals of Scotland, vol. i (1863) 351-2.
(b) PSAS v (1862-64) 126.
(c) PSAS li (1916-17) 236-7.

2. Site:
Near the Queen's Drive, Arthur's Seat, to the east of Samson's Ribs, Edinburgh.

3. Circumstances of Find:
Found during the construction of the Queen's Drive, 1846; (1) presented to the Museum by D. Wilson, 1863, (2) acquired by the Museum 1846, through the Queen's Remembrancer.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{1}{2}$", width across cutting edge $1\frac{3}{4}$", square socket mouth with moulded mouth, below which is slighter moulding at loop top, body section square, single loop. DE 16

(2) Socketed axe, length $3\frac{5}{8}$", width across cutting edge $2\frac{3}{8}$", oval socket mouth, single loop springs from body just below moulding at mouth, two thin mouldings run through loop, below which mouldings body is octagonal in section, widening to cutting edge. DQ 89

6. Comparisons:
(1) Gospertie, Fife; Citadel, Leith; Auchtertyre, Morayshire; Bagmoor, Lincs. Inv. Arch. GB 23, 15-18.
(2) Dungiven, Co. Derry; Muirhead, Ayrshire; related to Northern form, Sprockhoff 1941, taf 38, 10 map abb 67.

7. Dating:
Scottish LBA3, from 700 B.C.

8. Remarks:
The association with a Pigmy Vessel is not accepted. Socketed axe (2) formerly connected to two swords from Arthur's Seat, but evidence shows that this association is not correct.

Arthur's Seat, above Duddingston Loch, Edinburgh

1. Bibliography:
(a) D. Wilson (1863) 351-2, 393.
(b) PSAS xiii (1878-79) 330-331.
(c) PSAS li (1916-17) 237.

2. Site:
Near the Queen's Drive, Arthur's Seat, almost directly above Duddingston Loch, Edinburgh.

3. Circumstances of Find:
Found during the construction of the Queen's Drive, 1846, and presented to the Museum by the Queen's Remembrancer.

4. Description of the Site:
A bed of charcoal, c.300' above the level of the Loch.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, straight shoulders with trace of convexity, slight swelling in grip outline, blade has very slightly rounded midrib separated from edge bevel by flat areas, blunted and notched ricasso, one rivet hole in each shoulder, and two between flanges on edges of grip, one imperforate cast dimple on grip, length 24¾", maximum blade width 1¾". DQ 90

(2) Sword, leaf-shaped blade, straight shoulders with trace of convexity, slight swelling in grip outline, blade has rounded midrib separated from edge bevel by narrow flat areas, blunted and notched ricasso, one shoulder with two rivet holes, the other with one rivet hole and one imperforate cast dimple, long irregular slot in grip between edge flanges, grip broken, length 26⅛", maximum blade width 1¾". DQ 91

6. Comparisons:
(1-2) Arch. Ael. 4 X 1933, 185, Ewart Park type; Shuna, Argyll; Iochdar, South Uist; Grosvenor Crescent.

7. Dating:
Probably in Scottish LBA_3, from 700 B.C., possibly however earlier than this, in LBA_2 and eighth century.

Bell's Mills, Edinburgh

1. Bibliography:
(a) PSAS vi (1864-66) 275-276
(b) J. Evans (1881) 135-136
(c) J. Anderson (1886) 160-161
(d) PSAS li (1916-17) 236
(e) PSAS lvii (1922-23) 144 (IV, 3)

2. Site:
The Water of Leith, near Bell's Mills, Dean, Edinburgh.

3. Circumstances of the Find:
During digging 1865; purchased for the Museum by the Society, December 1865.

4. Description of the Site:
12' below the surface, embedded in clay. The section showed 5' of sand, 2' of gravel, 5' of blue clay.

5. Description of the Objects:
(1) Socketed axe, length 3½", sub-rectangular section, two mouldings, three vertical ribs. DE 17

(2) Socketed axe, length 5", collar, trumpet mouth, octagonal-sectioned body, no loop. DE 18

(3) Socketed axe, length 3½", moulded mouth, hexagonal section, waisted body. DE 19

(4-5) Socketed axes.

6. Comparisons:
(1) Yorkshire type; Horsehope, Peebles; Bagmoor, Lincs. Inv. Arch. GB 23, 11.

(2) Carlton Rode, Norfolk, Evans 1881, fig. 160; Ant. J xiii 1933, 297, London.

(3) ? Wigtownshire, Evans 1881, 134: Grisby, Broholm DBiii 181; Canterbury, Evans 1881, Fig. 118.

7. Dating:
Not before Scottish LBA_3, from 700 B.C.

Duddingston Loch, Midlothian

1. Bibliography:
(a) Letter Book of the Society of Antiquaries of Scotland, vol. i, (1780-81) 43.
(b) W. Smellie, Account .... of the Society of the Antiquaries of Scotland (1782) 39.
(c) PSAS i (1851-54) 132-133.
(d) D. Wilson, Prehistoric Annals of Scotland, i, (1863) 391, 408.
(e) J. Evans, Ancient Bronze Implements (1881) 289, 315, 335, 409, 424.
(f) J. Anderson, Scotland in Pagan Times. The Bronze and Stone Ages (1886) 142-3.
(g) PSAS lvi (1921-22) 360-364.
(h) PSAS lvii (1922-23) 146; (Callander's IV, 42).
(i) PSAS lxix (1934-35) 439-440.

2. Site:
"About 140 yards from the edge of the loch next to the King's Park", in Duddingston Loch, Edinburgh.

3. Circumstances of Find:
Found by workmen marl-dredging the bottom of Duddingston Loch in 1778. The objects were brought up in the "collecting leather bag" from a fairly deep part of the Loch. In the same mass were human bones and horns of animals.
The more perfect bronze objects were presented to George III, others were retained by the family of the owner of the loch, Sir Alexander Dick, some of which were subsequently given to Sir Walter Scott, and 53 pieces were presented to the Society of Antiquaries of Scotland on 16th January, 1781, by Sir Alexander Dick. This donation included 23 fragments of spearheads, 20 sword blades and 9 hilts, and a ring and staple from a bucket (DQ1-44). In 1935, three sword fragments and one spearhead were acquired for the Museum (DQ 302-305); these were originally presented to Sir Walter Scott and some were figured in his Abbotsford edition of the Waverley Novels, vol. ii, 103.

4. Description of the Site:
A bed of shell-marl, five to seven feet thick, lying below the black mould on the bottom of the Loch.

5. Description of the Objects:
See PSAS lvi (1921-22) 361, fig. 4; all fragmentary, a few with bronze drips. Types include Ewart and late Ewart swords, Class V and lunate spearheads, barbed and lunate spearheads, and a bucket fragment.

7. Dating:
The hoard, probably a founder's hoard, is dated to the mid-seventh century by its bucket staple, in Scottish LBA3.

Gogarburn, Midlothian.

1. Bibliography:
(a) PSAS vi (1864-66) 210, 311-312.
(b) PSAS xiii (1878-79) 331.
(c) J. Evans (1881) 304.
(d) J. Anderson (1886) 143-144.
(e) PSAS li (1916-17) 237, 240.
(f) PSAS lvii (1922-23) 146 (IV, 37).

2. Site:
A gravel pit opened at the erection of Gogarburn House, a little to the south of it, in the parish of Corstorphine, near Edinburgh.

3. Circumstances of Find:
Found in digging for gravel in 1811. Presented to the Museum 8th January, 1866, by Mrs. Bell, Forth Street, through J.M. Balfour, Esq.

4. Description of the Site:
Gravel pit.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 21¾", point missing, one rivet hole in each shoulder and one in tang. DL 6

(2) Chape, tongue-shaped, length 4½", perforated. DL 7

6. Comparisons:
(1) Arthur's Seat; Thenford Hill Farm, Northants, Inv. Arch. GB 12, 1-2; Meldreth, Cambs., GB 13, 3; Iochdar, South Uist; Ewart Park type.
(2) Tarves, Aberdeenshire; Cauldhame, Angus; Kilconan, Argyll; Wilburton Fen, Cambs. Fox 1923, pl. x.

7. Dating:
Possibly in Scottish LBA_2, from 900 B.C.

Remarks:
Callander (f) accepts a penannular gold ornament of triangular section as part of the hoard, but rejects a bronze penannular brooch. Anderson (d) states that these two objects were found in the same gravel pit but evidence doesn't warrant their inclusion with the sword and chape.

Grosvenor Crescent, Edinburgh

1. Bibliography:
(a) PSAS xiii (1878-79) 309-10, 320-23.
(b) J. Evans (1881), 290, 372, 401.
(c) J. Anderson (1886) 139-141.
(d) PSAS xxxiii (1898-99) 11-12.
(e) PSAS liv (1919-20) 215.
(f) PSAS lvii (1922-23) 144 (IV, 21).
(g) PSAS lxi (1926-27) 45-47.
(h) PSAS lxxiii (1938-39) 332.

2. Site:
7-8 Grosvenor Crescent, Edinburgh.

3. Circumstances of Find:
Found in excavating for the foundations of 7-8 Grosvenor Crescent, in 1869. The swords were said to number 14 or 15, much covered with verdigris, and some retaining traces of scabbard and hilt. The hoard was dispersed, part into the possession of Alexander Paterson who exhibited them to the Society of Antiquaries of Scotland in 1879, and part to Andrew Waddell who exhibited at the same time and subsequently presented his collection to the Museum. In 1898 the National Museum purchased several items from the sale of the Paterson collection; two swords in this sale passed into private hands; however, in 1920 the Museum acquired these items through the Purchase Committee. James E. Cree purchased in 1926 a sword from the Grosvenor Crescent hoard that had been preserved by one of the original labourers' family, and a socketed axe also said to have been a part of the hoard; the sword was known to have been lost to one of the workmen, but no mention of the socketed axe appeared in the original account. The National Museum purchased this sword from the Cree Collection in 1939.

4. Description of the Site:
Nothing further known.

5. Description of the Objects, all of bronze:
(1) Sword, leaf-blade, length 20¼", blade width 1⅝", cast bronze grip and pommel on clay core. DQ 201
(2) Sword, leaf-blade, length 19¼", blade width 1⅞", tang missing, two rivet holes in each shoulder. DQ 306
(3) Sword, leaf-blade, length 20", blade width 1¾", one rivet hole in each shoulder, one in tang. DQ 199
(4) Sword, leaf-blade, length 22", blade width 2", tang missing, two rivet holes in each shoulder. DQ 200
(5) Sword, leaf-blade, length 24½", blade width 1⅝", two rivet holes in each shoulder, three in tang. DQ 237
(6) Sword, leaf-blade, length 23¾", blade width 1½", three rivet holes in one shoulder, one plus two dimples in other, three holes in tang. DQ 236
(7) Sword, leaf-blade, length 21½", blade width 1⅞", two rivet holes in each shoulder, tang missing. Hunterian Museum
(8) Mounting, diameter 1¼", semi-tubular, two loops on concave back. DQ 203

(9) Ring, diameter 3", double convex section. DQ 204
(10) Pin, sunflower head, stem broken, formerly swan's-neck stem. DQ 202
(11) Socketed axe, thin oval-sectioned body, wide blade, flat moulded neck, possibly not a part of this hoard.

6. Comparisons:
(1) Tarves, Aberdeenshire; Leadburn, Peebles; Alnwick Castle 1880, pl. xvii, 4, pl. xviia, 1.
(2-7) Arch. Ael. 4 X 1933, 185, Ewart Park type; larger than normal Ewart swords; Thenford Hill Farm, Northants. Inv. Arch. GB 12, 1-2; Meldreth, Cambs. GB 13, 2.
(8) Welby, Leicester, GB 34, 16; P.Z. i 1909, 197.
(9) Kelton, Kirkcudbrightshire; Tinwald, Dumfries; Thenford GB 12,8.
(10) Tarves, Aberdeenshire; Perth Museum; Petersen 1929, 102 ff.

7. Dating:
The Grosvenor Crescent hoard dates by its fragmentary swan's-neck sunflower pin to the late sixth or fifth century B.C., in Scottish LBA_4.

Citadel, Leith, Midlothian

1. Bibliography:
(a) PSAS vi (1862-64) 313
(b) PSAS li (1916-17) 236

2. Site:
Near the Citadel, Leith.

3. Circumstances of the Find:
Found 1841 in digging near the Citadel; presented to the Museum by D.H. Robertson, January, 1866.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length 3½", square mouth with heavy moulding, second smaller moulding below at loop top, body section square, straight sides, single loop, knob at top of inner edge of socket.
DE 35

(2) Socketed axe, length 2 3/7th.", oval mouth with moulding, below which is second moulding, thence the body becomes hexagonal in section widening to broad cutting edge, single loop.
DE 36

6. Comparisons:
(1) Arthur's Seat; Auchtertyre, Morays; Bagmoor, Lincs. Inv. Arch. GB 23, 15-18

(2) Tynehead, Midlothian; Ballimore, Argyll; Great Freeman St., Notts. GB 22, 10.

7. Dating:
Not before Scottish LBA_3, from 700 B.C.

Murrayfield, Edinburgh.

1. Bibliography:
(a) PSAS xxvii (1892-93) 7.
(b) PSAS li (1916-17) 237.
(c) PSAS lvii (1922-23) 144 (IV, 25).

2. Site:
Murrayfield, Edinburgh.

3. Circumstances of Find:
Found when excavating; purchased for the National Museum, 1892.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Spearhead, leaf-blade, length 11", rivet holes, socket extends into wings. DG 71 or DQ 195

(2) Spearhead, leaf-blade, length 10¾", rivet holes, circular socket. DG 72 or DQ 194

6. Comparisons:
(1) Sleat, Skye; Bagmoor, Lincs. Inv. Arch. GB 23, 2-3; Class VB; Wilburton Fen, Cambs. Fox, 1923, pl. x.

(2) Sleat, Skye; Reach Fen, Cambs. GB 17, 4-5; Ballimore, Argyll; Class V.

7. Dating:
Probably in Scottish LBA$_3$, from 700 B.C.

Tynehead, Midlothian.

1. Bibliography:
(a) PSAS xliii (1908-9) 294.
(b) PSAS li (1916-17) 236-7.

2. Site:
Tynehead, Midlothian.

3. Circumstances of Find:
Unknown. Purchased for Museum 1909.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Socketed axe, length 3 1/16th", oval socket mouth with moulding, sub-rectangular body section widening to broad cutting edge slightly recurved. DE 68

(2) Gouge, socketed, length 2¼", fragmentary, probably plain at socket mouth. DO 36

6. Comparisons:
(1) Citadel, Leith; Ballimore, Argyll; Great Freeman Street, Notts, GB 22, 9-10.
(2) Monmore, Perthshire; River Tay, Perthshire; Reach Fen, Cambs., Inv. Arch. GB 17, 33; Thorndon, Suffolk, GB 11, 3.

7. Dating:
Scottish LBA3, from 700 B.C.

Auchtertyre, Morayshire

1. Bibliography:
(a) PSAS ix (1870-72) 435-443
(b) PSAS x (1872-74) 461-462
(c) J. Evans, (1881) 382, 425
(d) J. Anderson, (1886) 146-147
(e) PSAS lvii (1922-23) 144 (IV, 11)

2. Site:
"Tammiroo" moss, on the south side of the farm of Wester Auchtertyre, about halfway between the Manse of Birnie and the Priory of Pluscardin, Morayshire.

3. Circumstances of the Find:
Found about April, 1868 by a ploughman called Sime, while working in a mossy field; presented to Museum, June, 1873; Treasure Trove.

4. Description of the Site:
Found in peat, not deep-ploughed.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{1}{2}$", oval section, everted moulded mouth, slighter moulding below. DQ 108
(2) Spearhead, leaf-blade, length 7 3/7th", damaged. DQ 107
(3) Spearhead, leaf-blade, length 12", beadings along angular midrib and along socket sides to enclose rivet holes, damaged. DQ 106
(4) Penannular armlet, diameter $3\frac{1}{8}$", D-sectioned rod, terminals expand outwards. DQ 110
(5) Penannular armlet, like (4). DQ 111
(6) Penannular armlet, like (4) but diameter $3\frac{3}{8}$", damaged. DQ 112
(7) Penannular armlet, diameter 2 3/7th", D-sectioned rod, transverse grooves at terminals, expanded outwards. DQ 113
(8) Penannular armlet, diameter $2\frac{7}{8}$", like (7), damaged. DQ 114
(9) Penannular armlet, D-sectioned rod, like (4), damaged. DQ 115
(10) Penannular armlet, fragments, D-sectioned rod. NMA
(11) Fragments of tin ring, 4 pieces, containing 78.66 tin, 21.34 lead.

6. Comparisons:
(1) Wester Ord, Ross; Adabrock, Lewis.
(2) Inshoch, Nairn; Murrayfield, Edinburgh.
(3) Inshoch, Nairn; Torran, Argyll; Thenford Hill, Northants. GB 12,3-4.
(4-6,9-10) Covesea, Morays; Gight, Aberdeenshire; Type 2 bracelets.
(7-8) Covesea, Morays; Gight, Aberdeenshire; Type 2a bracelets.
(11) Lough Gara.

7. Dating:
Scottish LBA_3, from 700 B.C., Covesea phase.

Cullerne, near Findhorn, Morayshire

1. Bibliography:
(a) PSAS liv (1919-20) 124-131.
(b) PSAS lvii (1922-23) 144 (IV, 16).

2. Site:
About 150 yards north-north-east of Cullerne house, which is c. 700 yards from the eastern side of Findhorn Bay and c. 1 mile east-south-east of Findhorn village, Morayshire.

3. Circumstances of Find:
Found in September, 1894, by workmen digging a drain at Cullerne. The objects were acquired by Rev. John MacEwen, Dyke, subsequently purchased in 1919 by A.H. Bishop and presented to the National Museum.

4. Description of the Site:
The objects were found in a dark layer, c 30' above sea level, presumably an old land surface, intercalated in a sandy deposit which lies next to and partially covers a raised beach. Two feet of sand covered the dark layer at the find spot, and c. five feet of sand separated this layer from the underlying shingle beach.

5. Description of the Objects:
(1) Socketed axe, length 3⅜", sub-rectangular socket mouth with moulding, hexagonal body section widening to recurved cutting edge, single loop placed well down the socket. DQ 234
(2) Spearhead, socketed, leaf-shaped blade, length 7¾", maximum blade width 1⅝", two rivet holes in socket, wide blade bevel, broken just below blade base and at socket mouth. DQ 231
(3) Spearhead, socketed, leaf-shaped blade, length 5⅛", maximum blade width 1⅛", two rivet holes in socket, wide blade bevel, damaged at socket mouth and along bevels. DQ 232
(4) Curved knife, length 4 13/16th", maximum blade width 1⅛", socket does not extend into blade, one rivet hole perforated in same plane as flat of blade, mouth of socket broken away, thickened midrib on inside of curve of blade. DQ 233
(5) Razor, bifid blade, total length 2¾", maximum blade width 1⅜", notched at top and perforated, sub-rectangular-sectioned tang. DQ 235

6. Comparisons:
(1) Kalemouth, Roxburghshire; Inshoch, Nairn; Bagmoor, Lincs., Inv. Arch. GB 23, 27.
(2) Sleat, Skye, identical; Knockadoo PRIA 36c 1921-24, 143-146;
(3) Adabrock, Lewis; Heathery Haugh, Kincardineshire.
(4) Sleat, Skye, practically identical; Wester Ord, Ross; Ireland, Hodges 1956, 36, list 52.
(5) C. Piggott, 1946, for British list.

7. Dating:
Scottish LBA3, from 700 B.C., based upon the dating of the Sleat, Skye, hoard, supported by the curved knife in the Wester Ord (Covesea) hoard.

The Law Farm, Morayshire.

1. Bibliography:
(a) PSAS ii (1854-57) 530-1.
(b) Arch. J. xvi (1859) 209.
(c) Wilson (1863) 470.
(d) Anderson (1886) 217-218.
(e) PSAS xxv (1890-91) 66.
(f) PSAS xlv (1910-11) 11.
(g) PSAS lxiii (1928-29) 311.

2. Site:
A small cairn 40 yards from The Law, a tumulus on The Law Farm, Urquhart parish, Morayshire.

3. Circumstances of Find:
Found in the spring of 1857 by a ploughman; many were destroyed or lost before their value was recognized. One was presented to the Museum in July 1857 by Rev. Henry Walker of Urquhart, who reported that a good large gowpen full had been found, amounting to more than three dozen. Three other torcs were purchased by the Museum c. 1857; a fragment of a bronze torc was presented in January 1891 by H.W. Young of Burghead; two were purchased in 1910, one in 1929. Others were recovered by the British Museum, Kelvingrove, Hunterian, Elgin, and still others in private hands. Two have recently been purchased for the National Museum, 1958.

4. Description of the Site:
Under a small cairn of stones.

5. Description of the Objects:
Gold ribbon torcs, diameter 4" average, terminals hooked and generally thickened, rarely conical-headed.
NMA: FE 35, 36, 37, 38, 67, 68, 77, (2) 1958.
FE 38A bronze fragment.
Kelvingrove: Burrell Collection, LM.Mann Collection.
Hunterian: Lanfine Collection.
BM: 57.7-25.1, 58.3-20.1-3, WG 12 - 14.
Elgin Museum: 1888.10.
Private collections; The Lady Reay, Mrs. Johnson Stevenson.

6. Comparisons:
Ireland, Armstrong, 1933, pl. xiii;, Lower Largo, Fife; Douglas, Lanarkshire; Overshill, Belhelvie, Aberdeenshire.

7. Dating:
Northern gold ribbon torcs may date no earlier than Scottish LBA3, from 700 B.C., but possibly all ribbon torcs, bronze and gold, extend back to the early phase of the LBA, in the tenth century B.C.

Inshoch, Nairn.

1. Bibliography:
(a) PSAS xvi (1881-82), 31.
(b) J. Anderson (1886) 153.
(c) PSAS lvii (1922-23) 144 (IV, 12).

2. Site:
Inshoch, Nairnshire.

3. Circumstances of Find:
Found before 1782; presented to the Museum by Rev. J. Grant, 1782.

4. Description of Site:
Unknown.

5. Description of the Objects, all of bronze:
(1) Socketed axe, length 3½", slightly everted mouth, moulding at lip with two pairs of thin mouldings below, oval body section, recurved cutting edge, single loop. DQ 76
(2) Socketed axe, length 2½", moulding at sub-rectangular mouth, thinner moulding just above loop top, from which sub-hexagonal sectioned body descends to wide cutting edge, single loop. DQ 77
(3) Spearhead, socketed, leaf-shaped blade, length 8½" at present, maximum blade width 1¾", round socket extends as plain midrib, two rivet holes in socket, broken near point. DQ 74
(4) Spearhead, socketed, leaf-shaped blade, length 9", round socket extending as midrib to point, slight mouldings at sides of midrib extend down to enclose the rivet holes, blade edges bevelled. DQ 75
(5) Ring, semi-tubular, external diameter 2 11/16th". DQ 73

6. Comparisons:
(1) Tynehead, Midlothian; Ballimore, Argyll; Great Freeman Street, Notts., Inv. Arch. GB 22, 10; Ireland, Hodges, 1956, 40.
(2) Husabost, Skye; Cullerne, Morayshire; Gillespie, Wigtownshire.
(3) Heathery Haugh, Kincardineshire; Wilburton Fen, Cambs., Fox, 1923, pl. x.
(4) Ballimore, Argyll; Thenford Hill, Northants, Inv. Arch. GB 12, 3-4; Class VA.
(5) Great Freeman Street, Notts. GB 22, 16; Monmore, Perthshire.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Inshoch Wood, Nairn.

1. Bibliography:
(a) PSAS lxxix (1944-45) 180.
(b) PSAS lxxx (1945-46) 8 - 11.

2. Site:
On the edge of Inshoch Wood, near Woodend, between Auldearn and Brodie Stations, between 1 mile and 1½ mile from the shore, 4 miles from Nairn, Nairnshire.

3. Circumstances of Find:
Found c. 1945 by a Canadian soldier, and presented to Inverness Museum. Casts of items (1) and (2) presented to the N.M.A. by the Director of the Royal Scottish Museum 1945.

4. Description of the Site:
Nothing further known.

5. Description of the Objects:
(1) Spearhead, leaf-shaped blade, fragmentary, loops on socket.
(2) Socketed hammer, length 2½", circular socket.
NMA DO 47 cast
(3) Anvil, central block 1½" x 1½", conical projection, prismatic projection.
NMA DO 48 cast

6. Comparisons:
(1) Burgesses' Meadow, Oxford, GB 6, 1 - 2; Callander, Perthshire.
(2) Burgesses' Meadow, Oxford, GB 6, 6; Taunton Workhouse, Arch. J, xxxvii, 1880, 94.
(3) Bishopsland, PPS xii, 1946, pl. xiii; Evans, 1881, 182; Coutil L'Homme Prehist. 1912, 97-102, 181-5; Vadsby, Brondsted 1939 272; Broholm DO iv, no. 425; Kyle of Oykel, Sutherland.

7. Dating:
Scottish LBA_1, from 1100 B.C.

Remarks:
Anvil - spectrogram; copper 70, tin 30, iron .5, lead .1, ? nickel .05. Dr. M. Ritchie, Dept. of Chemistry, Edinburgh University.

Quoykea, Orkney

1. Bibliography:
(a) PSAS lvi (1921-22) 356-8, 116
(b) PSAS lvii (1922-23) 146 (IV, 44).

2. Site:
Quoykea Moss, on Earl of Ronaldshay's estate, St. Andrews parish, Orkney.

3. Circumstances of Find:
Found by a crofter while casting peats in summer 1921; Presented by the Earl of Ronaldshay to National Museum in February, 1922.

4. Description of Site:
In peat moss, c. 3' below the surface and c.4' above the underlying soil.

5. Description of the Objects:
(1) Socketed knife, length 5⅞", sub-rectangular socket mouth, socket extends 1½" to blade base, two rivet holes at right angles to flat of blade, blade 4½" long and ⅞" average width, wide flat midrib.
DQ 262
(2) Razor, bifid type, length 3¾", blade 2½" long, flat oval tang extends into blade as midrib, notch and perforation. DQ 263

6. Comparisons:
(1) Thorndon, Suffolk, Inv. Arch. GB 11, 2;
Little Crofty, Orkney; Wester Ord, Ross.

(2) C. Piggott, 1946, for British List.

7. Dating:
Probably Scottish LBA3, from 700 B.C.

Horsehope, Peebles.

1. Bibliography:
(a) PSAS xxii (1887-88) 199, 334-336.
(b) PSAS xxxi (1896-97) 78.
(c) PSAS lxxxvii (1952-53) 175-186.

2. Site:
On the sloping face of Horsehope Craig, high above Manor Water, Peeblesshire. Br. Nat. Grid. 290322

3. Circumstances of Find:
Found in 1864 by a shepherd, with additions, after further search by Mr. Linton, farmer of Glenrath. Presented to the Museum of the Chambers Institute in Peebles by Sr. John Naesmith, owner of the estate on which Horsehope Craig lies, in 1865. Linton sent notes and drawings to Jas. Anderson in 1882, stating that there were two socketed axes. There is also a report that some objects were lost about 1879m having been sent to Sir John Naesmith for inspection. In 1897 one socketed axe from Horsehope Craig was presented to the Museum of the Society of Antiquaries of Scotland by Lady Naesmith.

4. Description of the Site:
Under a large stone among the screes of Horsehope Craig.

5. Description of the Objects:
(1) Socketed axe, length 3¼", sub-rectangular socket mouth with collar below which the body section is octagonal, single loop. DE 60
(2) Socketed axe, length 2 2/3", square socket mouth, slight moulding near loop top, three short vertical bars, sub-rectangular body section, single loop.
(3) Dish-shaped mounting, diameter 2.3", 0.9" high, with tubular socket .9" internal diameter, pierced by two holes.
(4) Identical to (3).
(5) Identical to (3).
(6) Identical to (3).
(7) Identical to (3).
(8) Ribbed disc, diameter 2.7", slightly concave in section and with a cylindrical collar 0.5" high; the concave surfaces of the discs are ornamented with six cast concentric mouldings and a central knob; three perforations in the collar.
(9) Identical to (8).
(10) Curved mounting, thin bronze, broadly ribbed, curved in profile, length 3", width 2" maximum, perforated.
(11) Perforated mounting, broken, length 6.9", maximum width 1.85", circular perforation near wider end 1.3" diameter, two small perforations survive one on each plane.
(12) Identical to (11) except circular perforation is 1.1" diameter.
(13) Moulded strip, length 6.6", maximum width 0.85", perforated at each end with a pair of nail-holes; curved; hollowed centre and everted edges in section; broken.
(14) Similar to (13) but more fragmentary.

(15) Ring, hollow cast on clay core, external diameter 2.4", internal diameter 1.2", about one-third of circumference thinned down to an oval section, signs of wear on sides of thinned portion, and three points of wear on inner face of ring.
(16) Similar to (15).
(17) Similar to (15).
(18) Similar to (15).
(19) Similar to (15).
(20) Similar to (15).
(21) Ring, similar to (15), but external diameter 1.8", and two points of wear on inner face.
(22) Similar to (21).
(23) Similar to (21).
(24) Ring, similar to (21), but external diameter 1.5".
(25) Harness loop, width 2.1", two patches of wear inside the ring, broken.
(26) Ring, internal diameter 2.35", hollow cast on clay core, no signs of wear.
(27) Ring, internal diameter 1.45", no signs of wear.
(28) Ring, measurements 2" x 1.85", with thinned slightly oval section, no signs of wear.

6. Comparisons:
Fully discussed in (c).

7. Dating:
Scottish IBA_4, from the late seventh century B.C.

Lamancha, Peeblesshire.

1. Bibliography:

2. Site:
Lamancha, Peebles.

3. Circumstances of Find:
Unknown. At. Hull Museum.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Socketed axe, length 122 mm., heavy moulding at mouth, square section. Hull 186

(2) Socketed axe, length 131 mm., like (1). Hull 187

(3) Socketed axe, length 128 mm., like (1). Hull 188

6. Comparisons:
(1-3) North French type. Map Sprockhoff 1941, abb 89.

Callander, Perthshire.

1. Bibliography:

2. Site:
Within 30 miles of Callander, Perthshire.

3. Circumstances of Find:
Unknown. Found between 1790 and 1820. Taken to England by H. Macfarlane, deposited in Basingstoke Museum c.1925, purchased by National Museum 1955.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Socketed axe, length $2\frac{2}{8}$", collar, sub-rectangular section, narrow blade. DQ 321
(2) Spearhead, leaf-blade, length 10", loops on socket asymmetrically placed. DQ 324
(3) Rapier, length 11", point missing, two rivet holes, three-ribbed blade. DQ 322
(4) Rapier, length $5\frac{1}{8}$", fragment only, single-ribbed blade. DQ 323

6. Comparisons:
(1) Stuntney Fen, Cambs., Clark 1940, pl. vi; Newark, Notts. Inv. Arch. GB 36, 8 with ribbing; Irish type, Hodges, 1956, 31.
(2) Lagore crannog, PRIA 53c, 58, fig. 4B; Wilde, 1857, fig. 363.
(3) Crediton, Devon, Inv. Arch. GB 4, 2; Glentrool, Kirkcudbrightshire; Chatteris, Cambs., Evans, 1881, fig. 315.
(4) Downham Fen, Cambs., Fox 1923, pl. viii.

7. Dating:
The socketed axe appears to be of a later type than the other members of this hoard which point to a date in Scottish IBA1. The associated nature of the finds is not fully substantiated.

Druidstone Park, Perthshire

1. Bibliography:
(a) Glasgow Exhibition Cat. (1911) 880.
(b) PSAS lvii (1922-23) 146 (IV, 29).

2. Site:
Druidstone Park, Errol, Perthshire.

3. Circumstances of Find:
Unknown.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 21", blade width $1\frac{1}{2}$", one rivet hole in each shoulder, tang broken away.
Hunterian Museum.
(2) Sword, leaf-shaped blade, length $22\frac{1}{4}$", blade width $1\frac{5}{8}$", one rivet hole in each shoulder, one in tang.
Marischal College 253[2]

6. Comparisons:
(1-2) Arch. Ael. 4 X 1933, 185, Ewart Park type;
Cauldhame, Angus; Ballimore, Argyll; Heathery Haugh, Kincardineshire.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Near Dunsinane Hill, Perthshire.

1. Bibliography:
(a) PSAS lvii (1922-23) 146 (IV, 33).

2. Site:
Near Dunsinane Hill, Perthshire.

3. Circumstances of Find:
Unknown. Formerly Murray Thriepland Collection, Royal Scottish Museum L118, 92-93, and now on loan to National Museum, 1957.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Sword, leaf-shaped blade, length 25½", blade width 1⅝", two rivet holes in each shoulder, two in tang. L 1957.2.

(2) Sword, leaf-shaped blade, length 19¼", blade width 1½", two rivet holes in each shoulder, tang missing. L 1957.3

6. Comparisons:
(1-2) Arch. Ael. 4 X 1933, 185, Ewart Park type;
Jacksbank, Kincardineshire; Arthur's Seat, Edinburgh;
Heathery Haugh, Kincardineshire.

7. Dating:
Scottish LBA_3, from 700 B.C.

Monmore, Killin, Perthshire.

1. Bibliography:
(a) PSAS xvi (1881-82) 27-31, 409.
(b) J. Anderson (1886), 149-153.
(c) PSAS liv (1919-20) 129.
(d) PSAS lvii (1922-23) 144 (IV, 13).

2. Site:
A small round knoll, lying just behind the westernmost house in Monadh-mor, Killin, Perthshire.

3. Circumstances of Find:
Found 1868 by Mr. John McDiarmid while trenching the small knoll with a pickaxe. The objects were apparently tied together by twine which crumbled as it was touched. Purchased for the Museum in 1882.

4. Description of the Site:
The knoll was apparently a natural formation consisting of gravel with a thin layer of earth above. The hoard lay c. 1' below the surface, on the south-west side of the knoll and within a few yards of the top of it.

5. Description of the Objects:
(1) Socketed axe, length 2⅝", everted mouth, contraction to loop top, sub-rectangular section, recurved. DQ 51
(2) Socketed axe, length 4¼", like (1) rough octagonal section. DQ 52
(3) Spearhead, leaf-blade, length 10¾", socket expands slightly into wings, rivet holes. DQ 50
(4) Socketed gouge, length 2¾". DQ 54
(5) Tanged knife, length 6", rib on tang, angular midrib. DQ 53
(6) Ring, semi-tubular, diameter 2⅞". DQ 55
(7) Penannular ring, diameter 2⅞", D-sectioned rod, terminals expanded. DQ 56
(8) Ring, diameter 2¼", oval-sectioned rod, rough. DQ 57
(9) Ring, like (8). DQ 58
(10) Ring, like (8). DQ 59
(11) Ring, diameter 1¼", oval-sectioned rod. DQ 60
(12) Ring, diameter 2", D-sectioned rod. DQ 61
(13) Ring, like (11). DQ 62
(14) Ring, diameter 2", oval-sectioned rod. DQ 63
(15) Ring, like (14) rough. DQ 64
(16) Ring, like (15). DQ 65

6. Comparisons:
(1-2) Faceted type, but contraction at socket mouth unusual.
(3) Murrayfield, Edinburgh; Sleat, Skye; Bagmoor, Lincs., GB 23, 2-3.
(4) River Tay, Perthshire; Reach Fen, Cambs., GB 17, 33; Thorndon, Suffolk, GB 11, 3.
(5) Derryhale, Co. Armagh, Coffey, 1913, 82; Hodges 1956, List 52; Heathery Burn, Co. Durham, BM 1953, pl. vi; Great Freeman Street, Notts, GB 22.

(6) Inshoch, Nairn; Great Freeman Street, Notts. Inv. Arch. GB 22, 16.
(7) Alloa, Clackmannan in gold, Type 1; Broholm DO iv fig. 183, Sprockhoff 1956, taf. 39, 3, oath rings.
(8-16) Irish hoards, Ant. J. iii, 1923, 138, Derryhale op. cit.; Maryborough, Co. Leix, Camb. Museum.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Monzie Estate, Perthshire

1. Bibliography:

2. Site:
Monzie Estate, Perthshire.

3. Circumstances of the Find:
Unknown. Loaned to National Museum by Captain of Dunstaffnage.

4. Description of the Site:
Unknown.

5. Description of the Objects:
(1) Penannular ornament, gold, hollow triangular section, fragmentary, made of strips of gold wire soldered together.

(2) Bow-shaped dress fastener, gold, flat wide terminals, incised decoration.

(3) Penannular object, gold cover on ?copper core, terminals slightly expanded.

(4) Lunula, fragments.

6. Comparisons:
(1) Balmashanner, Angus; Torloisk, Mull; Whitefarland, Arran; Feltwell Fen, Norfolk Inv. Arch. GB 35, 15; Armstrong 1933, pl. xviii.

(2) Torloisk, Mull; Armstrong 1933, pl. xiv.

(3) Balmashanner, Angus; Covesea, Morays; Armstrong 1933, pl. xiv.

(4) Largatreany, Co. Donegal, Armstrong 1933, 23, pl. i-vii.

7. Dating:
Scottish LBA_3, from 700 B.C. The lunula must be an antique.

Shieldhill, Perthshire.

1. Bibliography:
(a) Rev. Goldie - paper to Stirling Field Club, December 13th, 1881.
(b) Anderson (1886) 213.

2. Site:
Shieldhill, Muckhart Parish, Perthshire.

3. Circumstances of Find:
Found during ploughing. Sold in Perth as bullion for £8.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Penannular armlet, gold, expanded terminals.

(2) Penannular armlet, like (1).

6. Comparisons:
(1-2) Gallow Hill, Angus; Coul, Islay; Hillhead, Caithness.

7. Dating:
Probably Scottish LBA3, from 700 B.C.

River Clyde, near Renfrew.

1. Bibliography:
(a) Glasgow Exhibition Cat. (1911) 880, 882.
(b) PSAS lvii (1922-23) 146 (IV, 36).

2. Site:
River Clyde at, Bowling, near Renfrew.

3. Circumstances of Find:
Dredged up from the Clyde. Kelvingrove Museum.

4. Description of the Site:

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 25", wide V-shaped butt, two rivet holes in each shoulder, three in tang.
Kelvingrove 2-49a.
(2) Chape, length $4\frac{5}{8}$", former length 6", hexagonal section, attached to sword.
Kelvingrove 2-49a.

6. Comparisons:
(1) South English group with V-shaped butts, lying behind the Wilburton type.

(2) Evans, 1881, fig. 366.

7. Dating:
Probably in the tenth century B.C.

Adabrock, Lewis.

1. Bibliography:
(a) PSAS xlv (1910-11) 11, 27-46.
(b) PSAS liv (1919-20) 128-9.
(c) PSAS lvii (1922-23) 144 (IV, 15).

2. Site:
A peat,moss, parish of Ness, Lewis.

3. Circumstances of Find:
Found by Donald Murray of Adabrock, in May 1910 while digging peats. The objects were "all in one group, the small things above and the heavier below". Purchased by the National Museum, 1910.

4. Description of Site:
In a peat moss, 9-10' below the surface.

5. Description of the Objects:
(1) Socketed axe, length $4\frac{1}{8}$", oval mouth, faceted body section, mouth moulding, slighter moulding below. DQ 211
(2) Socketed axe, length $2\frac{5}{8}$", sub-rectangular section, collar. DQ 212
(3) Spearhead, leaf-blade, length $4\frac{5}{8}$", rivet holes. DQ 215
(4) Socketed gouge, length $2\frac{3}{4}$", collar, recurved, wide blade. DQ 213
(5) Socketed hammer, length $2\frac{5}{8}$", moulding at mouth, square section. DQ 216
(6) Tanged chisel, length $2\frac{3}{4}$", shouldered. DQ 214
(7) Razor, length 3", notch and perforation, slight ribbing along midrib. DQ 218
(8) Razor, length $2\frac{7}{8}$", perforation, grooved midrib. DQ 217
(9) Razor, length $2\frac{7}{8}$", no notch or perforation, rounded midrib. DQ 219
(10) Bronze vessel, two fragments, beaten bronze, plain rim, hatched triangle incised decoration, traces of rivet holes, curved shoulder. DQ 220-221
(11) Gold bead, hollow, two-piece, diameter $\frac{1}{2}$". DQ 222
(12-13) Amber beads, diameter $\frac{5}{8}$", flat sides not parallel for slope adjustment. DQ 223-224
(14) Glass bead, blue, $\frac{1}{2}$" diameter, fractured surface. DQ 225
(15) Whetstone, sandstone, irregular trapeze. DQ 226
(16) Whetstone, claystone, irregular trapeze. DQ 227

6. Comparisons:
(1) Wester Ord, Ross; Husabost, Skye; Islay, Argyll; Feltwell Fen, Norfolk, Inv. Arch. GB 35, 1; Meldreth, Cambs. GB 13, 31; Wallingford, Evans 1881, fig. 150.
(2) Husabost, Skye; Castlehill, Angus; Reach Fen, Cambs., Inv. Arch. GB 17, 14; Meldreth, Cambs., GB 13, 28.
(3) Highfield, Ross; Castlehill, Angus; Bagmoor, Lincs. GB 23, 7; Thorndon, Suffolk GB 11, 1; Reach Fen, Cambs. GB 17, 4-5.
(4) MacWhite 1944b 160, splayed blade type; Knocknalappa, Co. Clare; Traprain Law, East Lothian.

(5) Thorndon, Suffolk, GB 11, 4; Isle of Harty, Kent, GB 18, 22-23; JRSAI 83, 1953, 101 ff.
(6) Reach Fen, Cambs. GB 17, 35; Wallingford, Berkshire, Evans, 1881, fig. 193; Traprain Law, East Lothian; Lough Gara.
(7-8) Feltwell Fen, Norfolk, GB 35, 13; C. Piggott 1946, for British list.
(9) Glentrool, Kirkcudbrightshire; Gight, Aberdeenshire.
(10) von Merhart 1952, group B2b cross-handled bowl; but see Hawkes 1957, 190, for other identifications.
(11) Alnwick Castle, Cat. 1880, 3, Chesterhope Common, Northumberland; M.N. Ireland 1885. 175-184.
(12-13) MacWhite 1944a; Banagher, Co. Offaly; Mountrivers, Co. Cork; Balmashanner, Angus.
(14) Glentrool, Kirkcudbrightshire; J. Stone, Ant. J. xxxii, 1952, 30 ff.
(15-16)

7. Dating:
The hoard is dated to Scottish IBA_4, from the late seventh century B.C., by its cross-handled bowl.

Aird, Barvas, Lewis.

1. Bibliography:
(a) PSAS xxvii (1892-93) 38-41.
(b) PSAS lvii (1922-23) 146 (IV, 30).

2. Site:
Croft of Murdo Maciver at Aird, South Dell, Barvas Parish, Lewis.

3. Circumstances of Find:
(1) found by Maciver in August 1891 while peat digging. (2) found in February 1892 within a foot or so of the same spot. Recovered by the Queen's Remembrancer on behalf of the Crown, and presented to the National Museum.

4. Description of the Site:
At a depth of 9' in peat.

5. Description of the Objects:
(1) Sword, leaf-shaped blade, length 23 7/8", blade width 2", slightly elongated tip, single piece ox-horn grip attached to tang by rivets, three rivet holes on one face, four on other.

DL 43

(2) Sword, leaf-shaped blade, fragment 9 3/4" long, two rivet holes in each shoulder.

DL 44

6. Comparisons:
(1) Arch. Ael. 4 X 1933, 185, Ewart Park type; Evans 1881, fig. 358-362.

7. Dating:
Scottish LBA3, from 700 B.C.

Highfield, Ross.

1. Bibliography:
(a) Smellie. Account of the Soc. Ant. Scotland, pt. i, 54.
(b) PSAS ii (1854-57) 153-154.
(c) Evans (1881) 336.
(d) Anderson (1886) 153.
(e) PSAS lvii (1922-23) 144 (IV, 10).

2. Site:
A cairn at Highfield, Urray Parish, near Dingwall, Ross and Cromarty.

3. Circumstances of the Find:
Found in trenching the bottom of a large cairn of stones. Presented to the Museum of the Society in 1781.

4. Description of the Site:
The hoard lay on a flat stone, covered over by other stones.

5. Description of the Objects:
(1) Socketed axe, length 3¾", sub-rectangular section, moulding at mouth, thin moulding below. DQ 83
(2) Socketed axe, length 4⅛", sub-rectangular section, three slight mouldings at mouth. DQ 84
(3) Socketed axe, length 4", sub-rectangular section, moulded mouth and thin moulding below. DQ 85
(4) Socketed axe, length 3¼", oval section, recurved blade, collar. DQ 86
(5) Spearhead, leaf-blade, length 7½", lunate openings in blade, beadings. DQ 87
(6) Spearhead, leaf-blade, length 4½", rivet holes. DQ 88

6. Comparisons:
(1) Reach Fen, Cambs. Inv. Arch. GB 17, 14; Great Freeman Street, Notts. GB 22, 6; Castlehill, Angus.
(2) Shoebury, Essex, GB 38, 26; Inshoch, Nairn;
(3) Bagmoor, Lincs. GB 23, 15; Inshoch, Nairn.
(4) Great Freeman Street, Notts. GB 22, 10; Dalduff, Ayrshire.
(5) Ballimore, Argyll; Glen Clova, Angus; Wilburton Fen, Cambs., Fox, 1923, pl. x.
(6) Felixstowe, Suffolk, Inv. Arch. GB 16, 21; Reach Fen, Cambs., GB 17, 4; Bagmoor, Lincs. GB 23, 7.

7. Dating:
Probably in Scottish LBA3, from 700 B.C., although the types represented may be of earlier date in the south.

Poolewe, Ross and Cromarty.

1. Bibliography:
(a) PSAS xiv (1879-80) 45-47.
(b) PSAS xv (1880-81) 155-156.
(c) J. Dixon (1886) 103 ff.
(d) J. Anderson (1886) 162-163.
(e) PSAS lvii (1922-23) 144 (IV, 7).

2. Site:
On the high ground overlooking the River Ewe, on the north side, some distance beyond the Public School, Poolewe, Ross.

3. Circumstances of the Find:
Found in May, 1877, by Hector McIver while digging peats. Owned by Sir Kenneth MacKenzie of Gairloch in 1879. (9) presented to the National Museum by Sir Kenneth Mackenzie in March 1881. (8) retained by McIver, now untraceable; remainder located in Conan House, now on loan to the National Museum, 1959.

4. Description of the Site:
In peat at depth of 6'.

5. Description of the Objects:
(1) Socketed axe, length $4\frac{1}{2}$", rectangular section, heavy moulded mouth, wide blade, fragment of haft.

(2) Socketed axe, length $4\frac{1}{2}$", rectangular section, heavy moulded mouth, vertical ribs with pellet decoration, short horizontal rib, wide blade.

(3) Socketed axe, length $2\frac{1}{2}$", rectangular section, recurved blade, broken.

(4) Socketed axe, fragment, length $3\frac{1}{2}$", rectangular section, moulded mouth.

(5) Socketed axe, fragment of blade, rectangular section.

(6) Ring, hollow, diameter 2", rough rectangular hole in side.

(7) Ring, diameter $3\frac{1}{4}$", T-shaped cross-section.

(8) Ring, like (7) (Anderson and Callander do not list this).

(9) Penannular ornament, trumpet terminals, solid rod.

6. Comparisons:
(1, 3-5) Husabost, Skye; Essenside, Selkirk; Wester Ord, Ross; North Knapdale, Argyll, Evans 1881, fig. 163; Great Freeman Street, Notts. GB 22, 7-8.

(2) Caston, Norfolk, Evans 1881, fig. 131; for horizontal bar see fig. 140-141.

(6) Derryhale, Co. Armagh, Coffey, 1913, 82.

(7-8) Helzen, Luneberg, Auh V ii x taf. 2, 1; Allendorf, Kr. Marburg PZ xxxiv-v, 1949-50, i, 202; also Mestorf, 1885, taf. xxii, 226; Sprockhoff 1956, taf. 58, 5; Germania xix, 1935, 116, taf. 7, 1; xiii, 1929, 25 abb 5, 8.

(9) Glenaray, Argyll, Whitefarland, Arran in gold; Proudfoot, 1955 37 ff; Armstrong 1933, pl. xv-xvi; bronze, Wilson, 1863, 461.

7. Dating:
Not before Scottish LBA3, from 700 B.C. The rings (6-8) may be connected with harness of some sort.

Wester Ord, Ross.

1. Bibliography:
(a) PSAS viii (1868-70) 309-310.
(b) J. Anderson (1886) 146.
(c) PSAS liv (1919-20) 129.
(d) PSAS lvii (1922-23) 144 (IV, 17).
(e) PSAS lix (1924-25) 113

2. Site:
The farm of Ord or Wester Ord, Rosskeen parish, on Invergordon estate, 1½ miles north-east of Invergordon Railway Station, Ross and Cromarty.

3. Circumstances of Find:
Found in 1859; exhibited by R.B.A. McLeod, Cadboll, Invergordon Castle, 14th February, 1870, and subsequently disappeared from view. Purchased at the Invergordon sale by a Mr. Murdoch, dealer; purchased by J. S. Richardson, 8th December, 1924, from Murdoch in Inverness, and donated to the National Museum.

4. Description of the Site:
Under the corner of a large boulder, possibly buried with a cloth wrapping.

5. Description of the Objects, all of bronze:
(1) Socketed axe, length 3⅝", sub-rectangular section, double moulding.
DQ 266

(2) Socketed axe, length 3½", moulded mouth, octagonal section, recurved.
DQ 267

(3) Curved knife, socketed, length 4½", rivet holes at right angle to blade.
DQ 270

(4) Socketed gouge, length 4", four ribs around socket mouth.
DQ 269

(5) Socketed knife, length 7¾", rivet hole, broken. DQ 268

(6) Penannular armlet, diameter 3", D-sectioned rod, terminals expand outwards.
DQ 272

(7) Three fragments of bronze rod, length 15", one with terminal expanded and perforated, series of small hollows with lips along outer curve of rod, only two fragments now extant.
DQ 271

6. Comparisons:
(1) Bagmoor, Lincs. GB 23, 9; Reach Fen, Cambs., GB 17, 15; Highfield, Ross; Gospertie, Fife.

(2) Adabrock, Lewis; Feltwell Fen, Norfolk, GB 35, 1; Meldreth, Cambs. GB 13, 31.

(3) Sleat, Skye; Cullerne, Morayshire; Hodges, 1956, 52 list.

(4) Achnahanaid, Skye; Isle of Harty, Kent. GB 18, 26-27.

(5) Forfar, Angus; Falkland, Fife; Thorndon, Suffolk, GB 11, 2.

(6) Covesea, Morayshire; Auchtertyre, Morayshire; Balmashanner, Angus; Rehill, Aberdeenshire.

(7) Braes of Gight, Aberdeenshire; Ziemitz type, Sprockhoff 1956, taf. 25, abb 38.

7. Dating:
The Type 2 armlet and Gight-type necklet show that Wester Ord belongs to the Covesea phase of Scottish LBA3, from 700 B.C.

Eildon Hills, Roxburghshire.

1. Bibliography:
(a) PSAS lix (1924-25) 14.

2. Site:
A burn on the north-west side of Eildon Hills, Roxburghshire.

3. Circumstances of Find:
Unknown. Purchased for the Museum, 1924.

4. Description of the Site:
A burn.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{3}{8}$", moulded mouth, slighter moulding below, three vertical ribs, s quare section. NMA DQ 273

(2) Socketed axe, length $3\frac{1}{8}$", like (1). NMA DQ 274

6. Comparisons:
(1-2) Yorkshire type, Fox 1933, 158; Hodges, 1956, 40, fig. 6; Kalemouth, Roxburghshire; Essenside, Selkirkshire; Horsehope, Peebles; Great Freeman Street, Notts. GB 22; Bagmoor, Lincs, GB 23.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Flight, Roxburghshire.

1. Bibliography:
(a) Sinclair. The Statistical Account of Scotland, vol. xvi, (1795) 84n.
(b) Jeffrey, The History and Antiquities of Roxburghshire, vol. i (1864) 191n.

2. Site:
Flight farm, on the south bank of the Liddell, near Clintwoodburn, Roxburghshire.

3. Circumstances of the Find:
During the removal of a stone wall surrounding a circular fort of about 100' diameter, the farmer of Flight found, at a considerable depth, items (1) and (2); 1793.

4. Description of the Site:
At a considerable depth, among some large stones.

5. Description of the Objects:
(1) Socketed axe, length 4½".

(2) Sword, length about 36", broken.

Kalemouth, Roxburghshire

1. Bibliography:
(a) PSAS lxvi (1931-32) 422-424.
(b) PSAS lxxxvi (1951-52) 200-201.

2. Site:
At the top of the steep left bank of the Briton Syke, where it joins the Kale Water from the north; about 250 yards from where the Kale flows into the Teviot, near Kalemouth, Roxburghshire.

3. Circumstances of the Find:
Found in February, 1932, by Mrs. Cochran of Kalemouth House. (1-5) and (8-14) given to the National Museum by The Earl of Dalkeith, as well as casts of (6-7). (6) given to Mrs. Cochran, (7) given to Jedburgh Museum.

4. Description of the Site:
Among the stones of a low grass-covered cairn.

5. Description of the Objects:

(1) Socketed axe, length $3\frac{1}{2}$", three vertical bars.	DQ 286
(2) Socketed axe, like (1).	DQ 287
(3) Socketed axe, like (1).	DQ 288
(4) Socketed axe, like (1).	DQ 289
(5) Socketed axe, like (1).	DQ 290
(6) Socketed axe, like (1).	DQ 291
(7) Socketed axe, length $3\frac{1}{2}$", faceted section, collar.	DQ 292
(8) Socketed axe, length $3\frac{1}{4}$", like (7).	DQ 293
(9) Socketed axe, like (8).	DQ 294
(10) Socketed axe, like (8).	DQ 295
(11) Socketed axe, length $3\frac{3}{4}$", like (7).	DQ 296
(12) Socketed axe, length 3", like (1), prominent second moulding.	DQ 297
(13) Socketed axe, like (1).	DQ 298 cast
(14) Socketed axe, like (1).	DQ 299 cast

6. Comparisons:
(1-6, 12-14) Yorkshire type; Fox, 1933, 158; Hodges, 1956, 40; Horsehope, Peebles; Eildon Hills, Roxburghshire; Bagmoor, Lincs. GB 23, 11-13.

(7-11) Horsehope, Peebles; Bagmoor, Lincs. GB 23, 24-27; Ballimore, Argyll.

7. Dating:
Not before Scottish LBA3, from 700 B.C.

Yetholm, Roxburghshire.

1. Bibliography:
(a) PSAS v (1862-64) 165, pl. iv.
(b) D. Wilson (1863) 398.
(c) PSAS viii (1868-70) 393.
(d) Archaeological and Historical Collections of Ayr and Wigton Vol. I (1878) 69.
(e) J. Evans (1881) 349-351.
(f) J. Anderson (1886) 156.
(g) R. Munro (1899) 200.
(h) O. Montelius, Archaeologia lxi (1906) 144, tafel 17.
(i) R.A. Smith, PSA London 2nd series xxxi (1918-19) 150.
(j) PSAS lvii (1922-23) 146 (IV, 48).
(k) E. Sprockhoff (1930), 5, 12.

2. Site:
(1-2) in a field near Yetholm, about 8 miles south of Kelso; (3) in a field in Yetholm Bog, about ½ mile north-west of Yetholm, on the north side of the Kelso-Yetholm road.

3. Circumstances of Find:
(1-2) found in 1837, in digging a drain in a marshy field; exhibited to the Society of Antiquaries of Scotland on 10th April, 1837 by George Wauchope, Esq., of Niddry; purchased by the Museum, 1863. (3) found while ploughing, on March 19th 1870, in a small field in Yetholm Bog; exhibited to the Society of Antiquaries of Scotland May 9th, 1870, by the Queen's Remembrancer; loaned to the National Museum of Antiquities by the Tweedside Physical and Antiquarian Society in 1933.

4. Description of Site:
(1 and 2) found 4' below the surface; (3) found 10" from the surface, standing on its edge. The field lies in Yetholm Bog, formerly part of a large lake which joined the River Beaumont close to Yetholm, drained about 1830.

5. Description of the Objects:
(1) Shield; 23½" diameter; central boss 4" diameter surrounded by thirty concentric embossed ribs alternating with thirty rows of small bosses; sheet bronze handle attached by rivets; rivets placed on shield holding small tongues for ? strap attachment.
NMA DN 2

(2) Shield; 24" diameter; central boss 4" diameter surrounded by twenty-four concentric embossed ribs alternating with twenty-four rows of small bosses; similar to (1) but more fragmentary.
NMA DN 1

(3) Shield; 22½" diameter; central boss 3⅝" diameter surrounded by twenty-seven concentric embossed ribs, alternating with twenty-seven rows of small bosses; similar to (1) and (2) in other respects.
NMA L 1933.2114

6. Comparisons:
(1-3) Scotland; Achmaleddie, Aberdeenshire; Beith, Ayrshire.
England; Thames, Sprockhoff, 1930, taf. 2f.
Wales; Moel Siabod, Caernarvon, Grimes 1951, pl. vi.
Denmark; Sorup Mose, Broholm DB iii, 181, M24.

7. Dating:
Probably in the ninth century B.C., possibly as late as the early eighth century.

Easter Essenside, Selkirkshire.

1. Bibliography:
(a) Proc. Berw. Nat. Club xi (1885-86) 492.
(b) PSAS xxviii (1893-94) 327.

2. Site:
On the lower slopes of Gurnside Hill, south-west of Easter Essenside Farm, Ashkirk Parish, Selkirkshire.

3. Circumstances of Find:
Unknown. Only objects (1) and (2) are certainly associated, the others are not documented as of this hoard.

4. Description of Site:
Unknown.

5. Description of Objects:
(1) Socketed axe, length 3", square section, moulding at mouth, wide blade. illustrated in (a), now lost.
(2) Socketed axe, length 3¼", collar, faceted body section, wide bevelled blade. illustrated in (a).
(3) Socketed axe, length 3¼", square section, three vertical ribs. photo NMA, formerly Pratt Collection, Kelso.
(4) Socketed axe, length 3¼", oval section, moulded rim. reported in (b).
?(5) Socketed axe, length 3¼", collar, faceted section, possibly the same axe as (2). photo NMA, C. Douglas loan to NMA.
?(6) Socketed gouge, length 3¼".
?(7) Penannular armlet, diameter 2⅛", expanded terminals.

6. Comparisons:
(1) North Knapdale, Argyll, Evans 1881, fig. 163; Poolewe, Ross; Wester Ord, Ross; Great Freeman Street, Notts. GB 22, 7-8.
(2, 5) Horsehope, Peebles; Bagmoor, Lincs. GB 23, 24-27.
(3) Kalemouth, Roxburghshire; Bagmoor, Lincs. GB 23, 11-13.
(4) Great Freeman Street, Notts. GB 22, 10; Ballimore, Argyll.
(6) Torran, Argyll; Achnahanaid, Skye; Tynehead, Midlothian.
(7) Monmore, Perthshire; Balmashanner, Angus.

7. Dating:
Scottish LBA3, from 700 B.C.

Gillespie, Wigtownshire.

1. Bibliography:
(a) PSAS xlv (1910-11) 418-419.
(b) PSAS lvii (1922-23) 144 (IV, 2).

2. Site:
The farm of Gillespie, Old Luce parish, Wigtownshire.

3. Circumstances of Find:
Found in cutting a drain on the farm; acquired by the Museum in 1911.

4. Description of the Site:
At a depth of 4'.

5. Description of the Objects:
(1) Socketed axe, length $3\frac{1}{8}$", moulding at mouth, collar, octagonal section below collar. DQ 228

(2) Socketed axe, exactly similar to (1). DQ 229

(3) Socketed axe, like (1) except that faceted section extends into collar, length $3\frac{1}{2}$". DQ 230

6. Comparisons:
(1-2) Rehill, Aberdeenshire; Horsehope, Peebles; Ballimore, Argyll; Bagmoor, Lincs. GB 23, 24-27.

(3) Achnahanaid, Skye.

7. Dating:
Probably not before Scottish LBA_3, from 700 B.C.

Penninghame, Wigtownshire.

1. Bibliography:
(a) Archaeological and Historical Collections of Ayrshire and Galloway, vii, (1894) 29.
(b) PSAS xxv (1890-91) 417.

2. Site:
Penninghame, Wigtownshire.

3. Circumstances of Find:
A pair of armlets found in a cairn; one armlet acquired by the National Museum in 1891.

4. Description of the Site:
A cairn.

5. Description of the Objects:
(1) Penannular armlet, gold, diameter 2½", D-sectioned rod, terminal expanded, one terminal missing, weight 426 grains.
NMA FE 57

(2) Another of the same.

6. Comparisons:
(1-2) Crrock, Fife; Gallow Hill, Angus; Coul, Islay.

West of Scotland.

1. Bibliography:
(a) PSAS xxviii (1893-94) 237.

2. Site:
A cairn in the West of Scotland.

3. Circumstances of Find:
Found before 1726; acquired by the Museum, 1894 from the Collection of Sir John Clerk of Penicuik.

4. Description of Site:
A cairn.

5. Description of Objects:
(1) Spearhead, leaf-blade, fragment 5¼", rivet holes. NMA DQ 196

(2) Spearhead, fragment 4", leaf-blade. NMA DQ 197

(possibly 1 and 2 belong to same spearhead, but doubtful).

(3) Ferrule, length 5", expanded foot, perforation. NMA DQ 198

6. Comparisons:
(1-2) Ballimore, Argyll; Heathery Haugh, Kincardineshire; Cullerne, Morayshire.

(3) Thenford Hill, Northants. GB 12, 7; Fulbourn, Cambs., Evans 1881, fig. 426; Czechoslovakia, Hradenin, ref. under GB 12, 7.

7. Dating:
Probably Scottish LBA3, from 700 B.C., possibly slightly earlier.

Other finds without sufficient documentation to treat as hoards, or without sufficient evidence regarding composition.

Freefield, Old Rayne, Aberdeenshire.
Class IIIA and two Class VA spearheads.
Aberdeen Reg. Museum.

Carmylie Hill, Angus.
Several bronze penannular rings, plain terminals.
Wilson (1863) 454.

Argyll.
Two gold penannular armlets.
Formerly Inverary Castle.

Near Campbeltown, Argyll.
Socketed knife, possibly other articles.
Wilson (1863) 390.

Strachur, Argyll.
Shouldered chisel "with other bronze relics".
Evans (1881) 170.

Ochiltree Moat, Ayrshire.
Two spearheads.
Smith (1895) 142.

Near Banff.
Two bronze penannular rings.

Tinwald, Dumfries.
Looped spearhead, class IIIA, and bronze ring.
Thornhill Museum, no. 10, 11.

Kilmallie, Inverness.
Two gold penannular armlets.

Wester Golcantry, Inverness.
Socketed axe, NMA DE 114, fragment DE 115, palstave DC 128.
PSAS lxxiv (1939-1940) 149.

Lundie Farm, near Doune, Perthshire.
Two socketed axes.
Smith Institute AK 1 - 2.

Scotland.
Gold torc and armlet, penannular, conical terminals.
Kelvingrove Burrell Collection.

Other reputed hoards, unacceptable:

PSAS xxii	390	Caverton, Roxburghshire.
PSAS xxii	390	Birrenswark, Dumfries (possibly true association).
PSAS xxxv	12	Genoch, Inch, Wigtownshire.
PSAS lv	11	Annan, Dumfries.
PSAS lx	31	Springfield Hill, Dunscore, Dumfries.
PSAS iii	102	Kinneff Castle, Kincardineshire.
PSAS lxxxii	321	Dungyle Camp, Kelton, Kirkcudbrightshire.
PSAS xxii	399	Kells, Kirkcudbrightshire.
PSAS lxxii	69	Clova estates.

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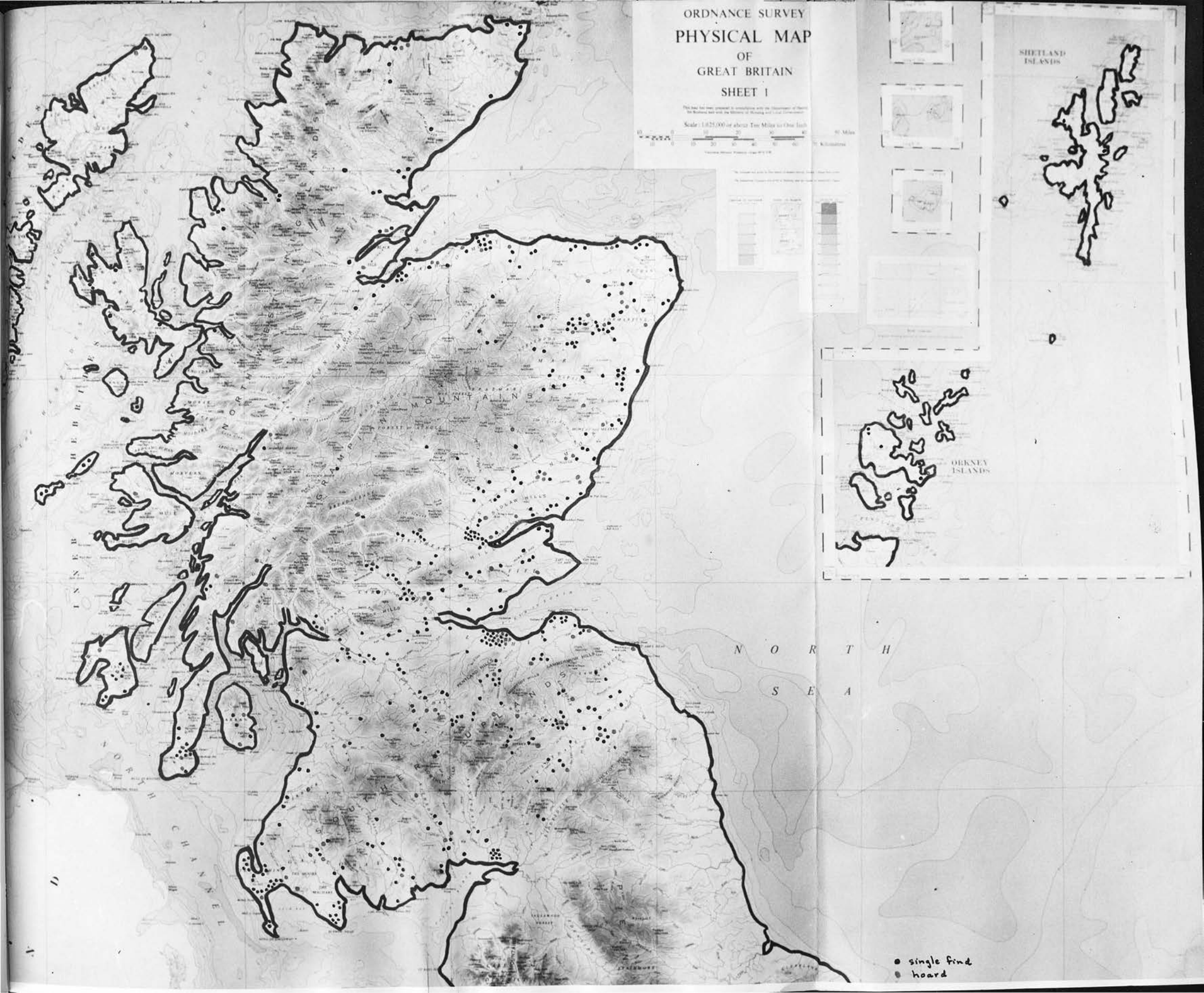
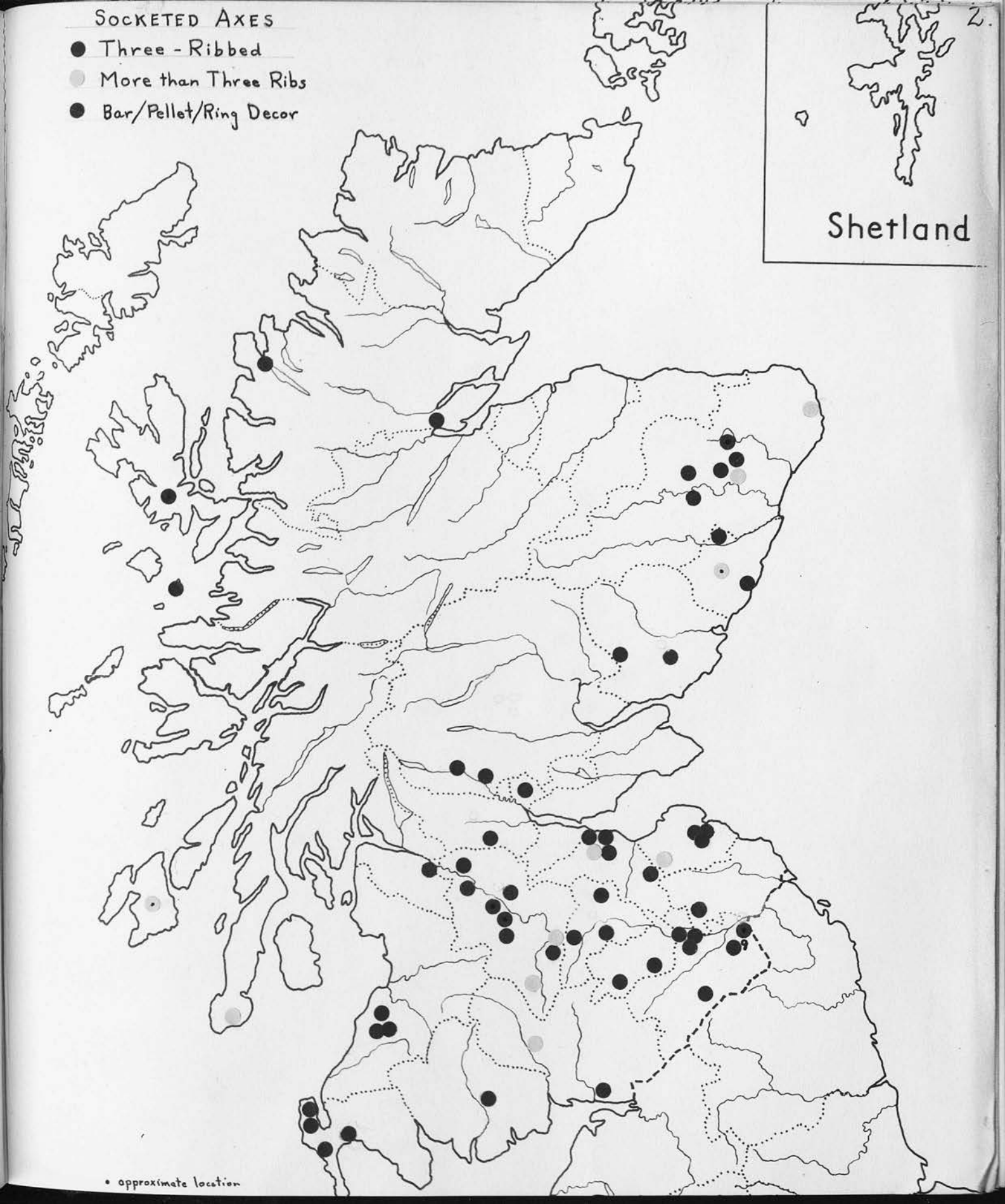
Abbreviations (other than those in common use)

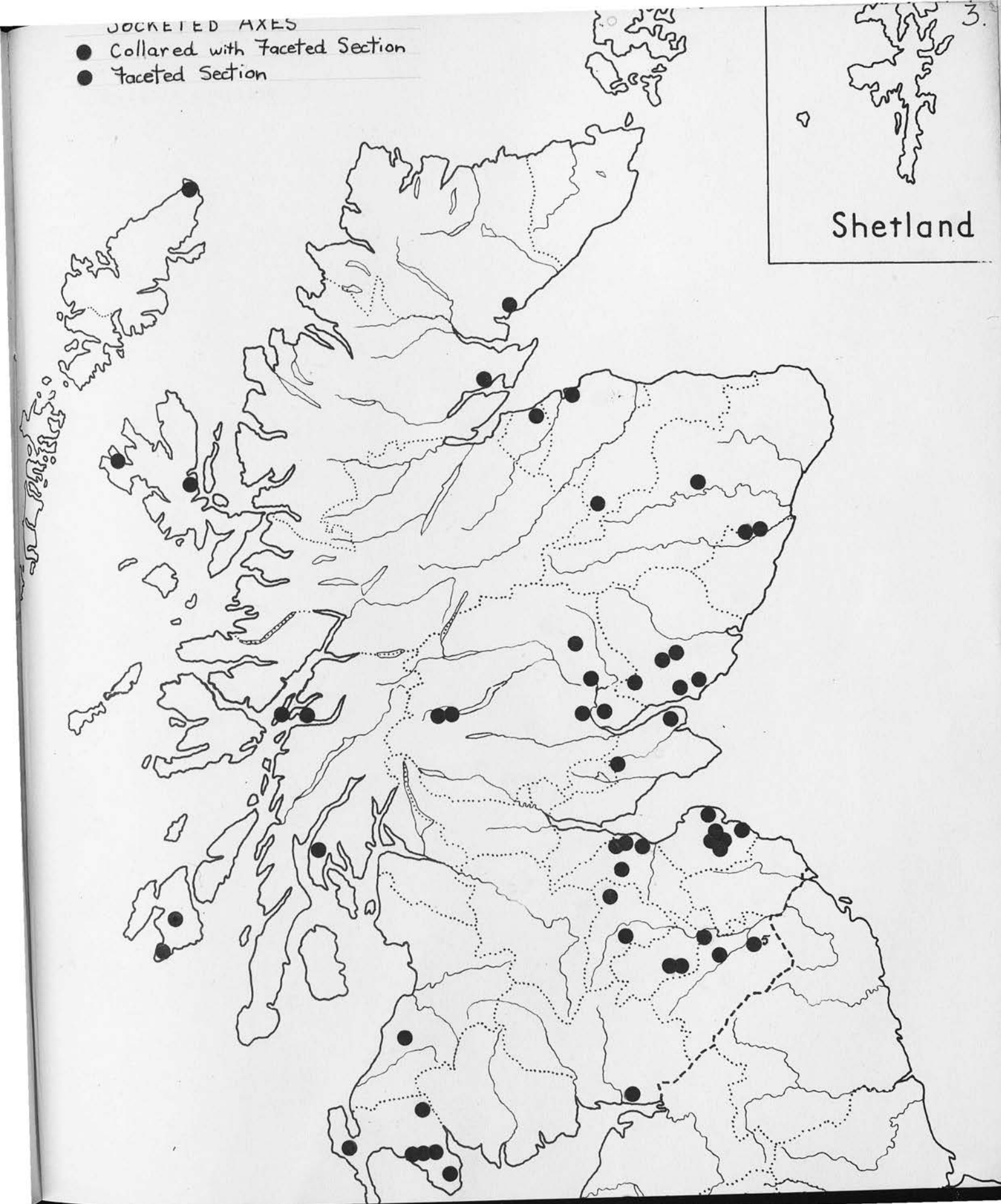
Acta Arch - Acta Archaeologia (Copenhagen)
IPEK - Jahrbuch fur Praehistorische und Ethnographische Kunst (Cologne)
JSGU - Jahrbuch der schweizerischen Gesellschaft fur Urgeschichte
NNU - Nachrichten aus Niedersachsens Urgeschichte (Hanover)
P.Z. - Praehistorische Zeitschrift (Berlin)
SGM - Scottish Geographical Magazine
ZSAK - Zeitschrift fur schweizerische Archeologie und Kunstgeschichte
M.Z.- Mainzer Zeitschrift (Mainz)

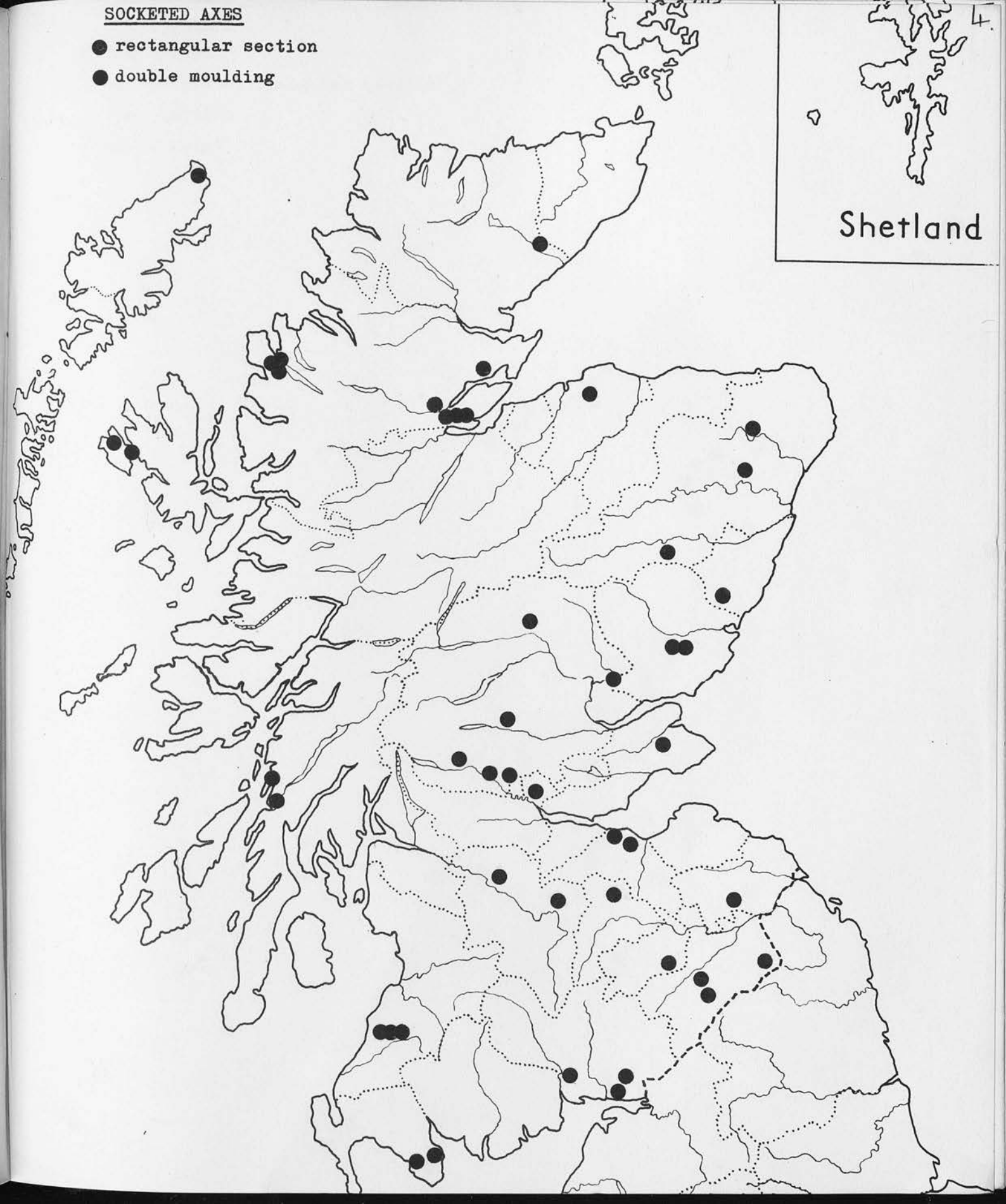

ORDNANCE SURVEY
PHYSICAL MAP
OF
GREAT BRITAIN
SHEET 1
SHETLAND ISLANDS
ORKNEY ISLANDS
NORTH SEA
single find
hoard

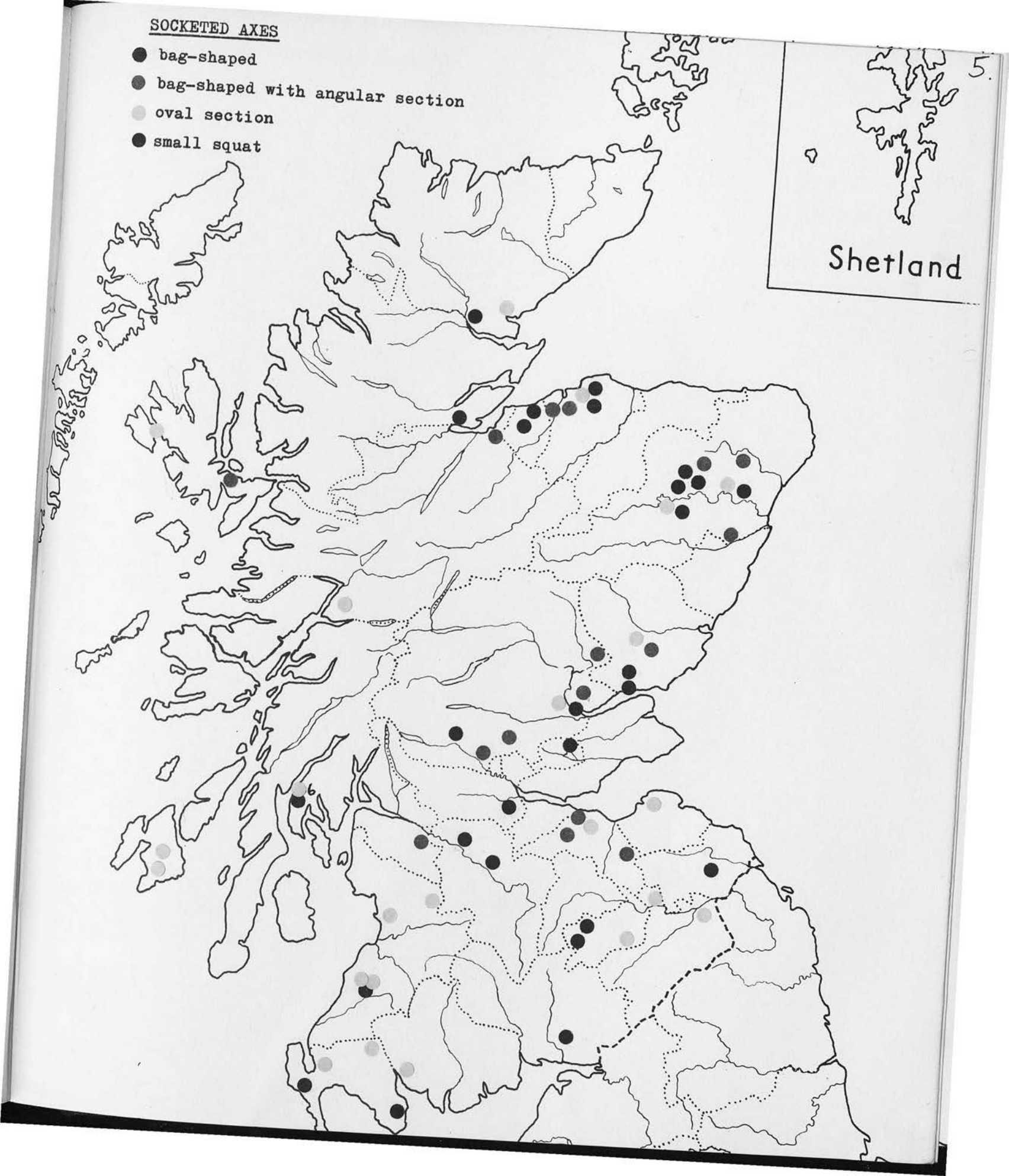

SOCKETED AXES
Three - Ribbed
More than Three Ribs
Bar/Pellet/Ring Decor
Shetland
• approximate location

SOCKETED AXES

- Collared with Faceted Section
- Faceted Section

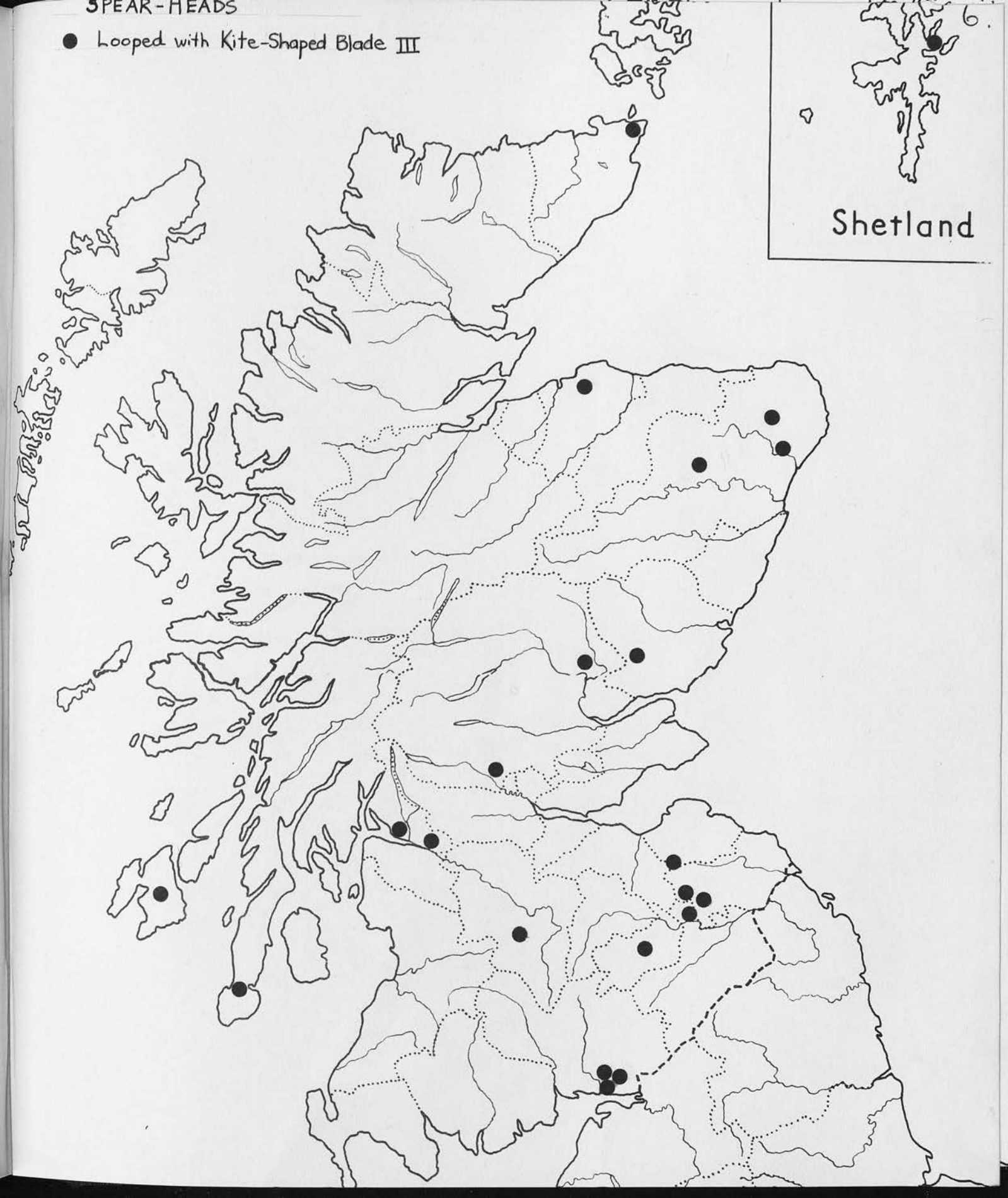



SOCKETED AXES
rectangular section
double moulding
Shetland


SOCKETED AXES
bag-shaped
bag-shaped with angular section
oval section
small squat
Shetland

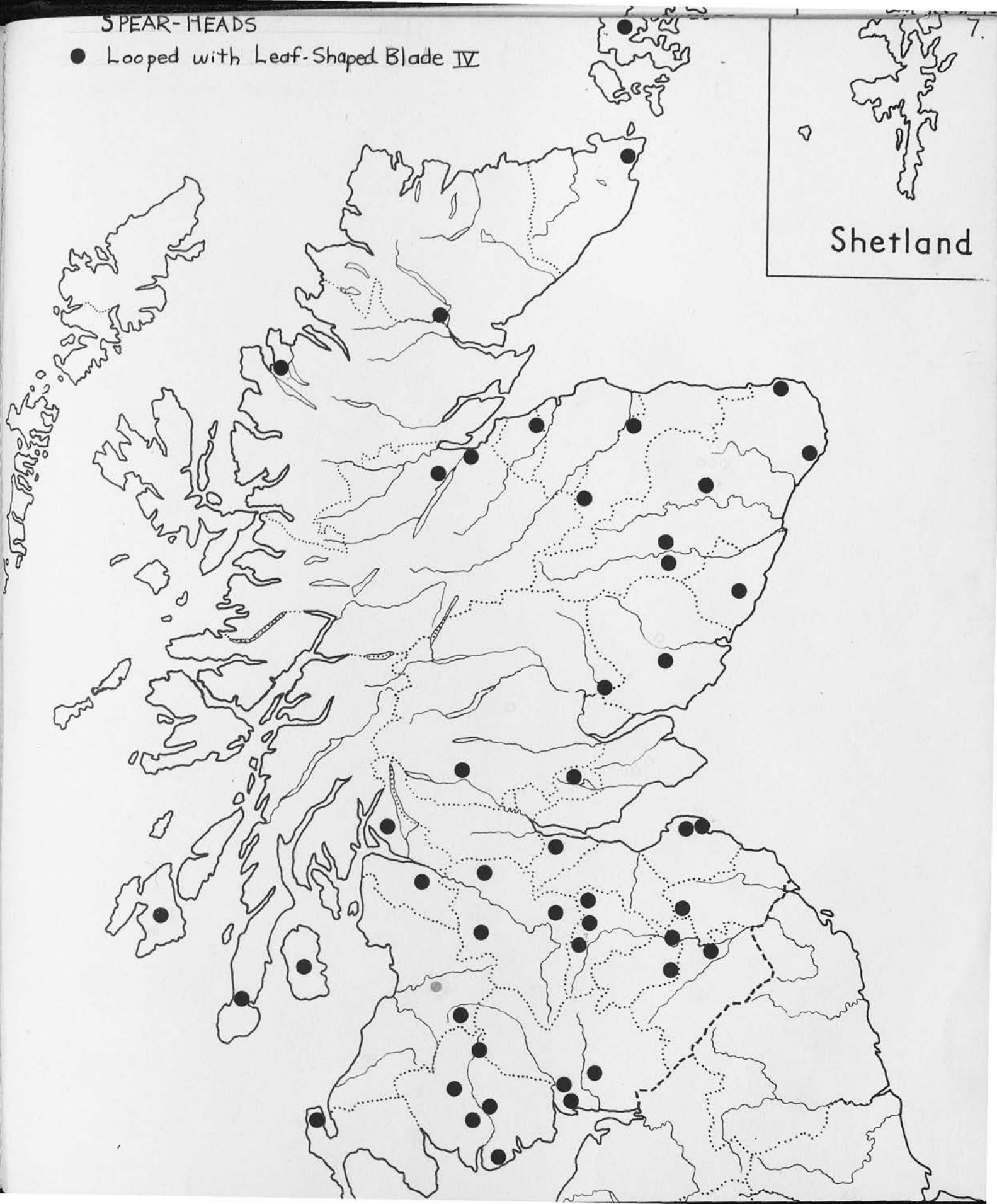
SPEAR-HEADS

● Looped with Kite-Shaped Blade III



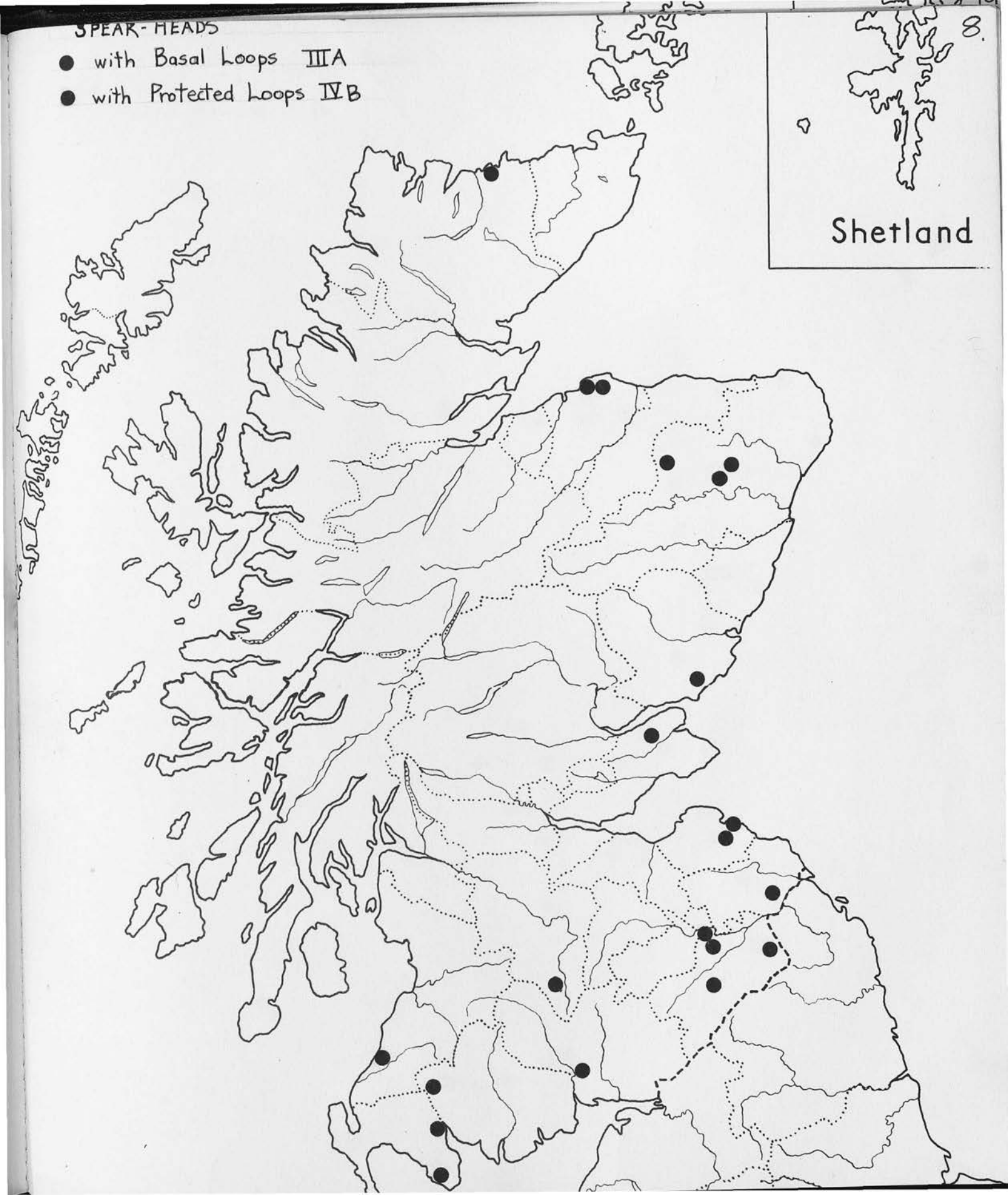
SPEAR-HEADS

● Looped with Leaf-Shaped Blade IV



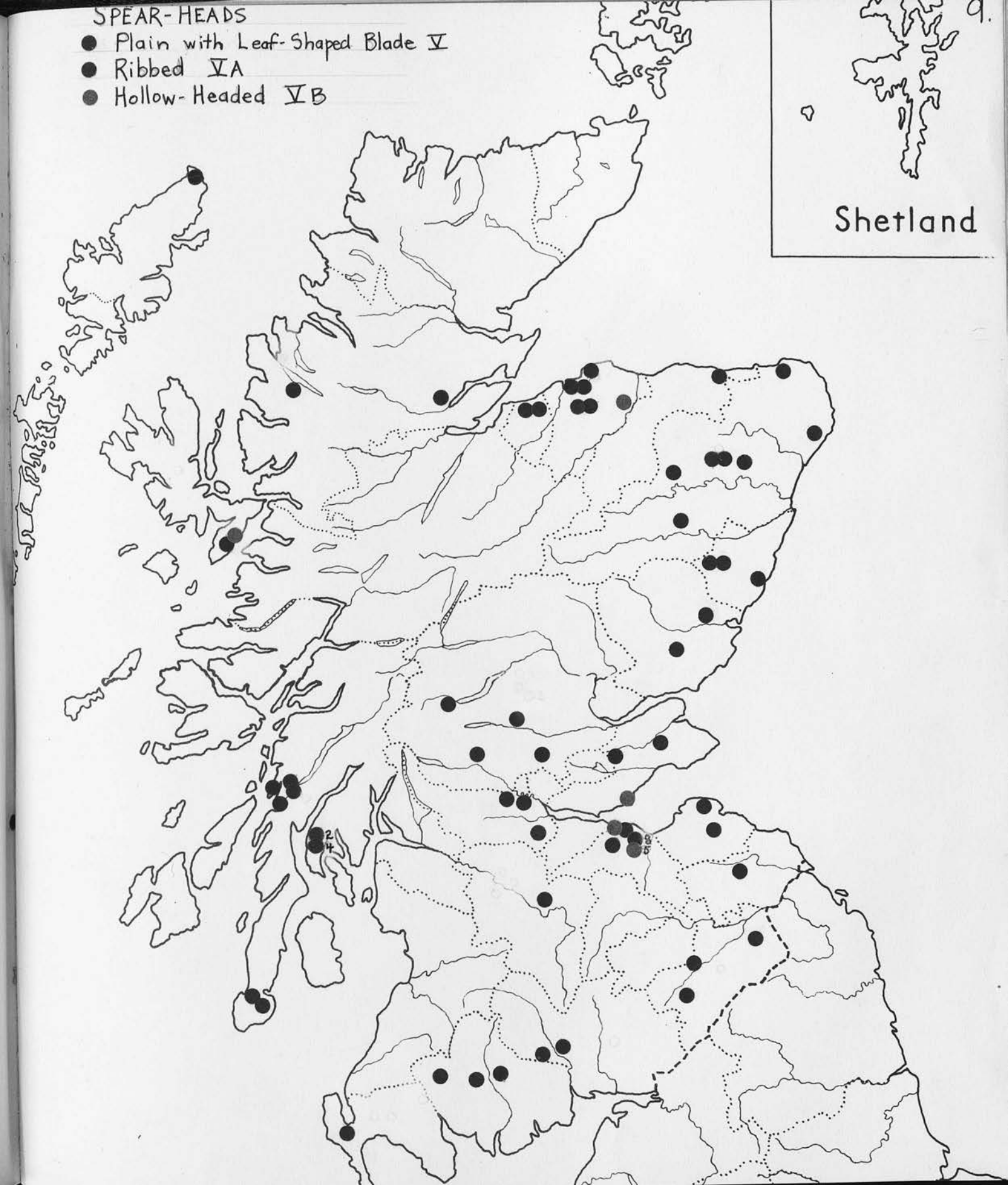
SPEAR-HEADS

- with Basal Loops IIIA
- with Protected Loops IVB



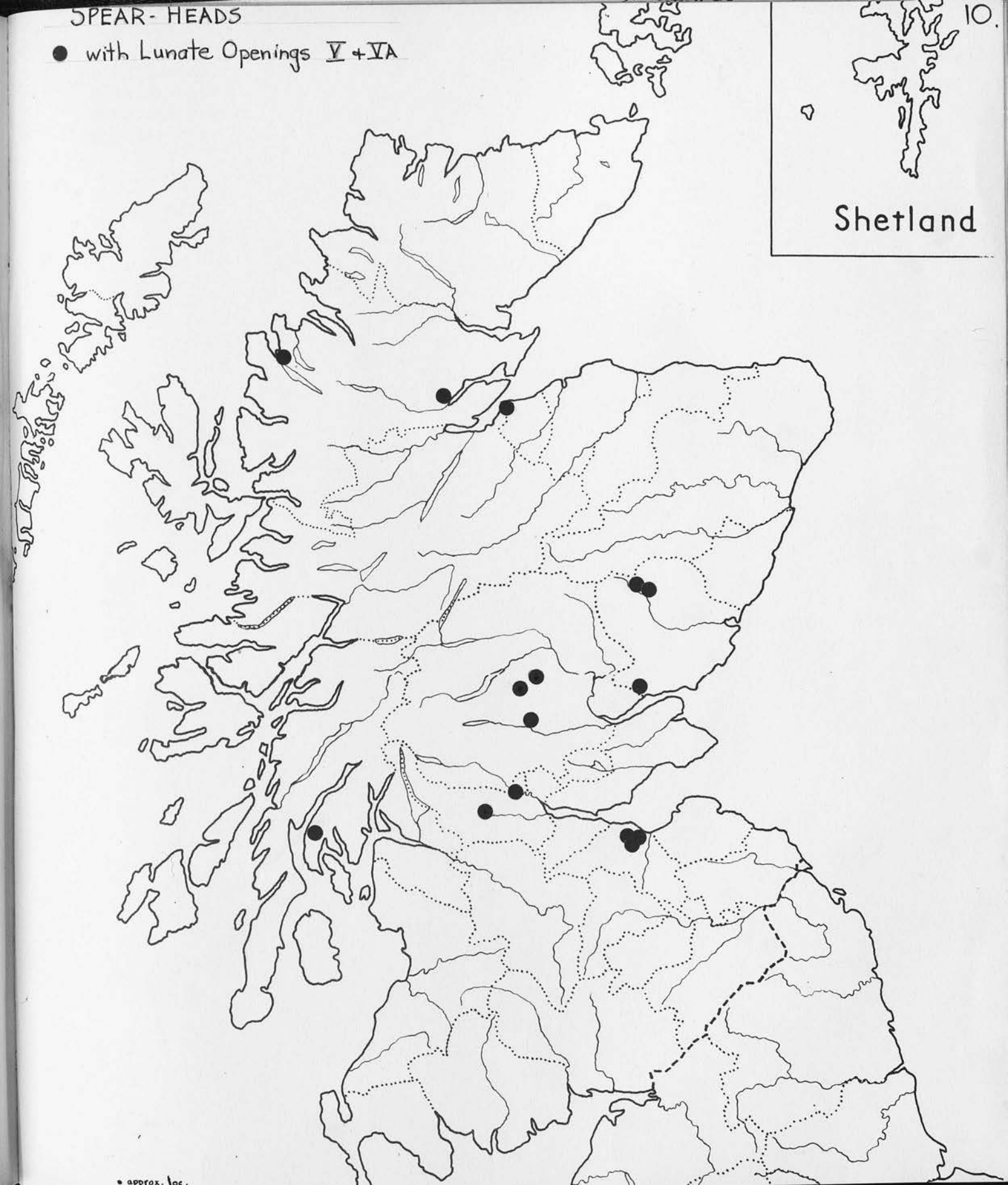
SPEAR-HEADS

- Plain with Leaf-Shaped Blade V
- Ribbed VA
- Hollow-Headed VB

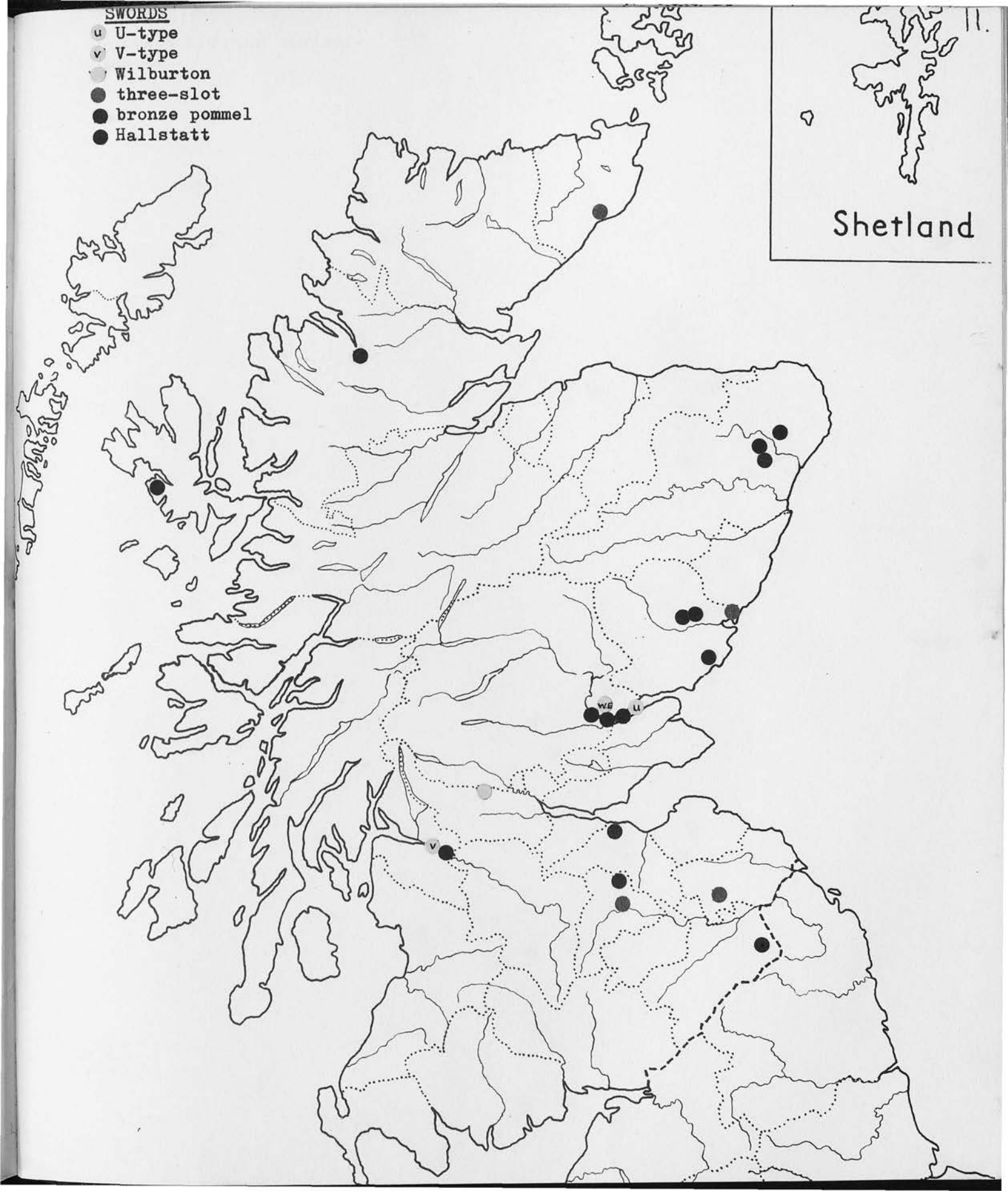


SPEAR-HEADS

● with Lunate Openings V + VA



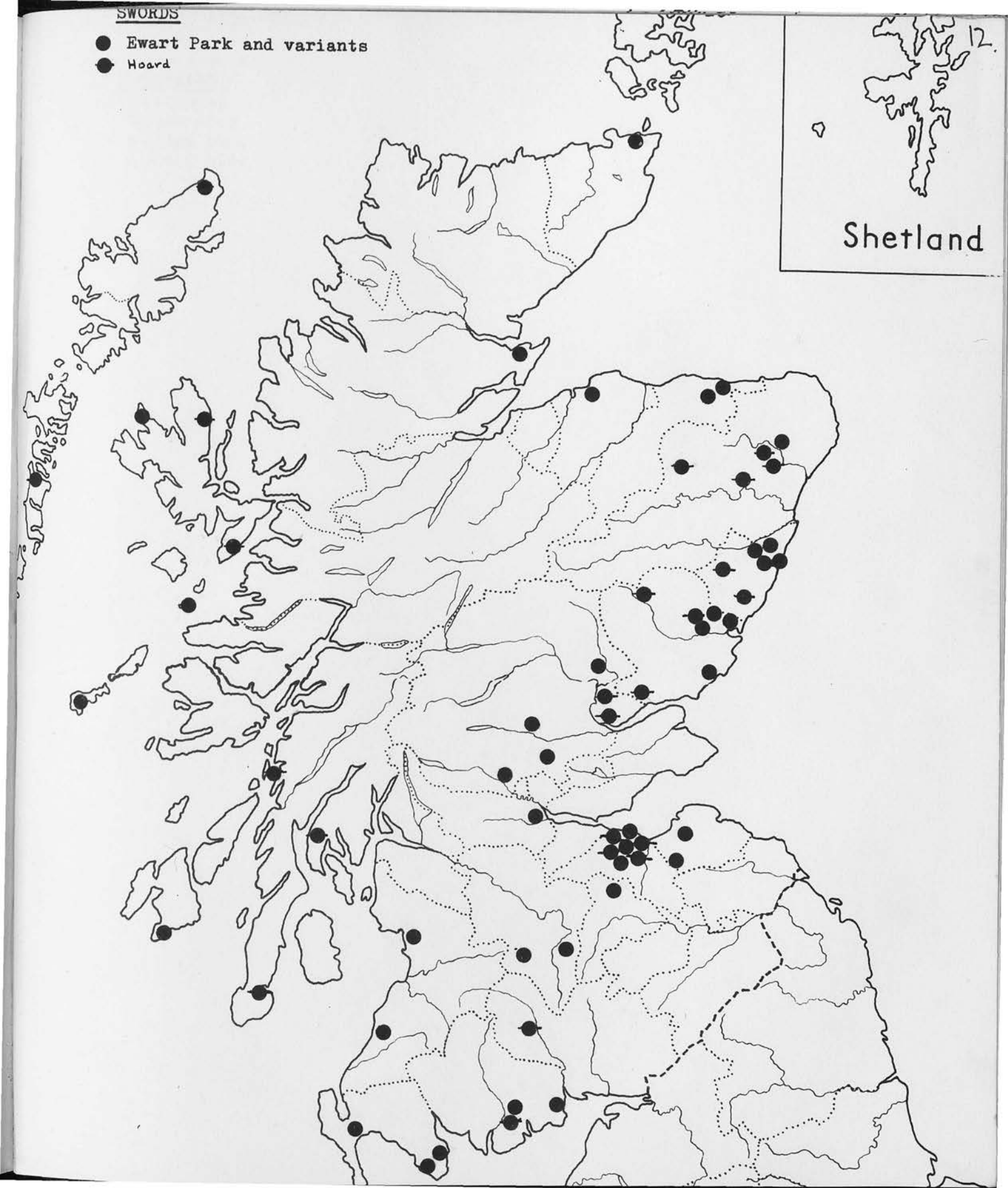
• approx. loc.

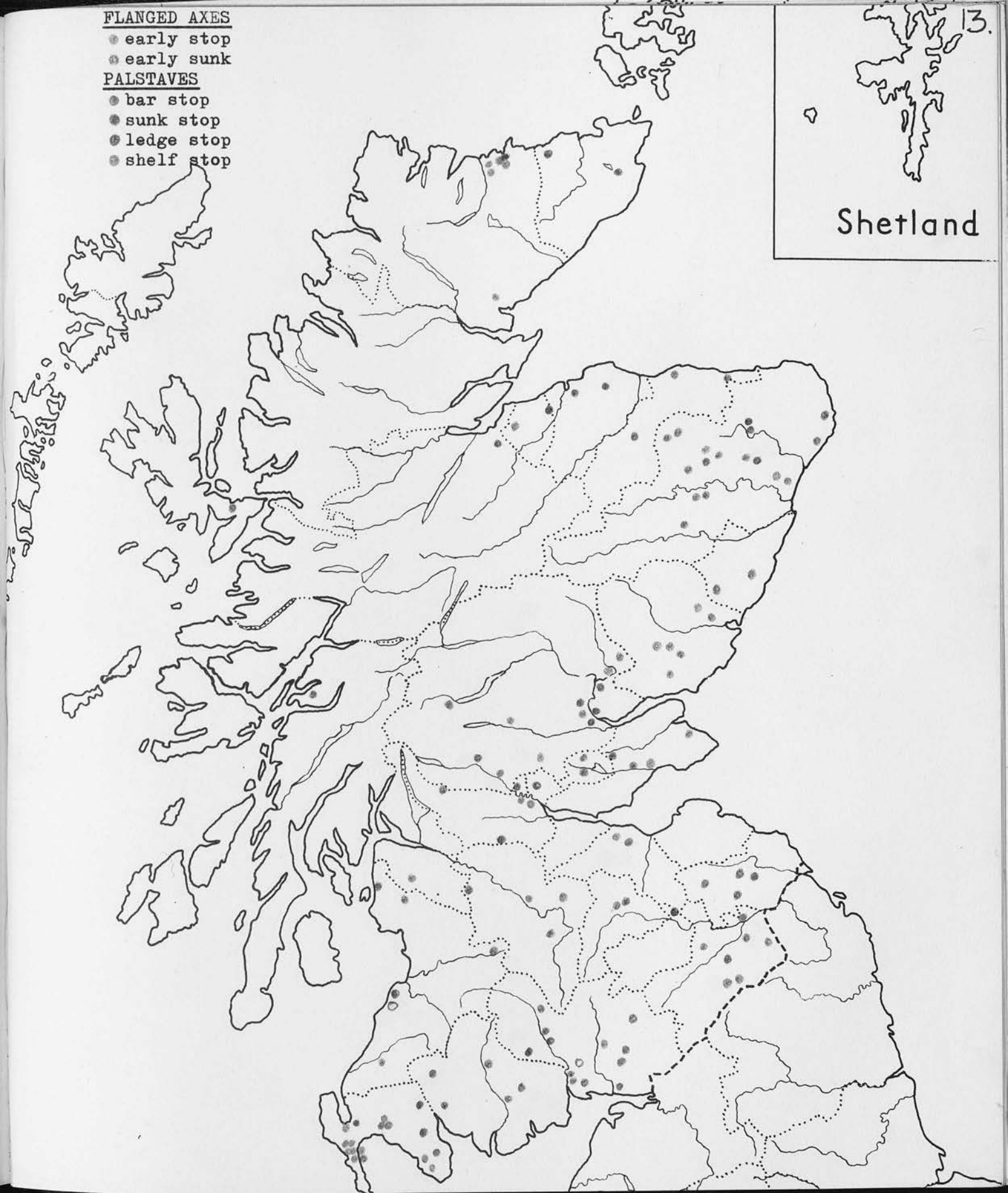

SWORDS
u U-type
v V-type
Wilburton
three-slot
bronze pommel
Hallstatt
Shetland
W.B
U
V

SWORDS

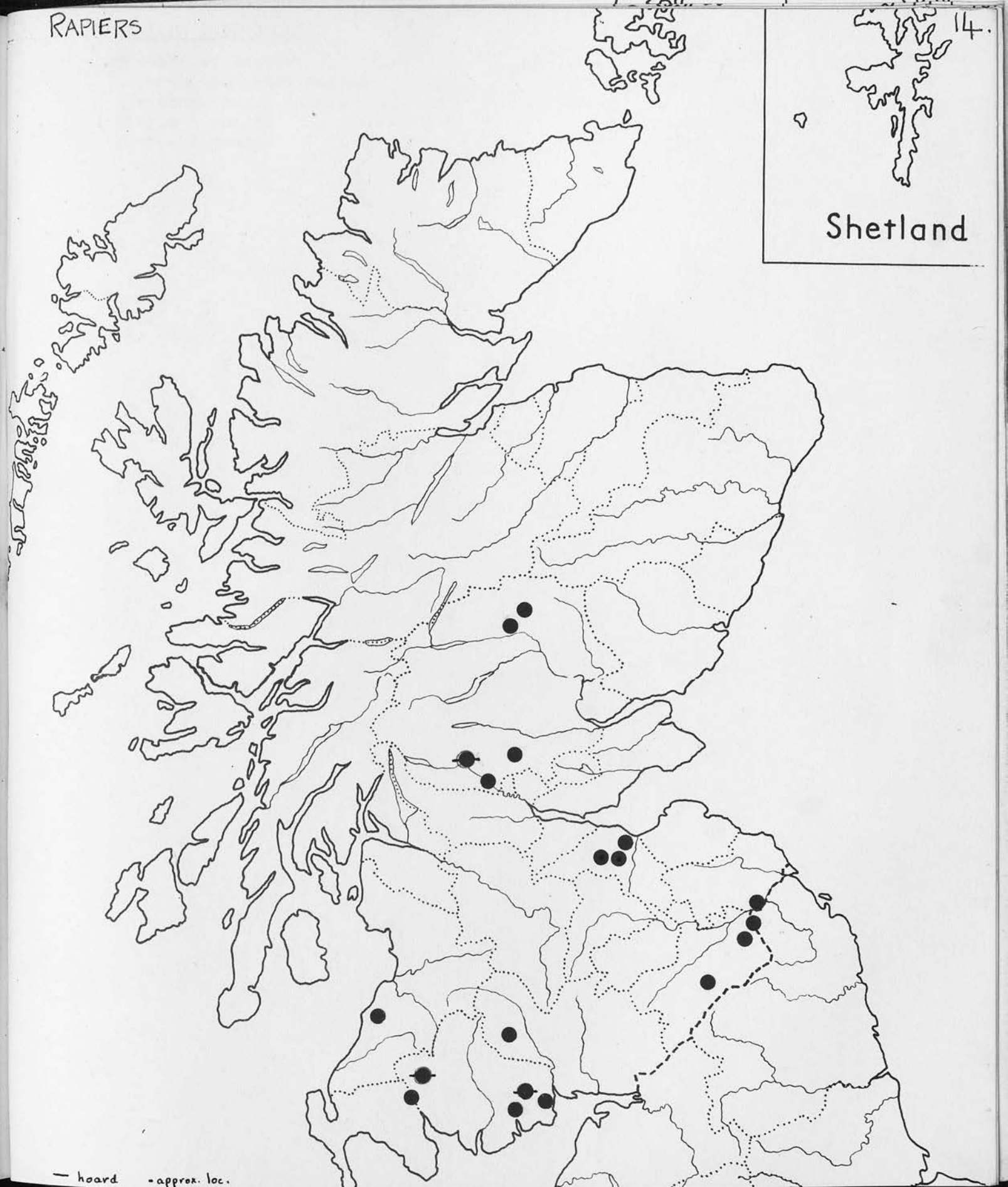
● Ewart Park and variants

● Hoard

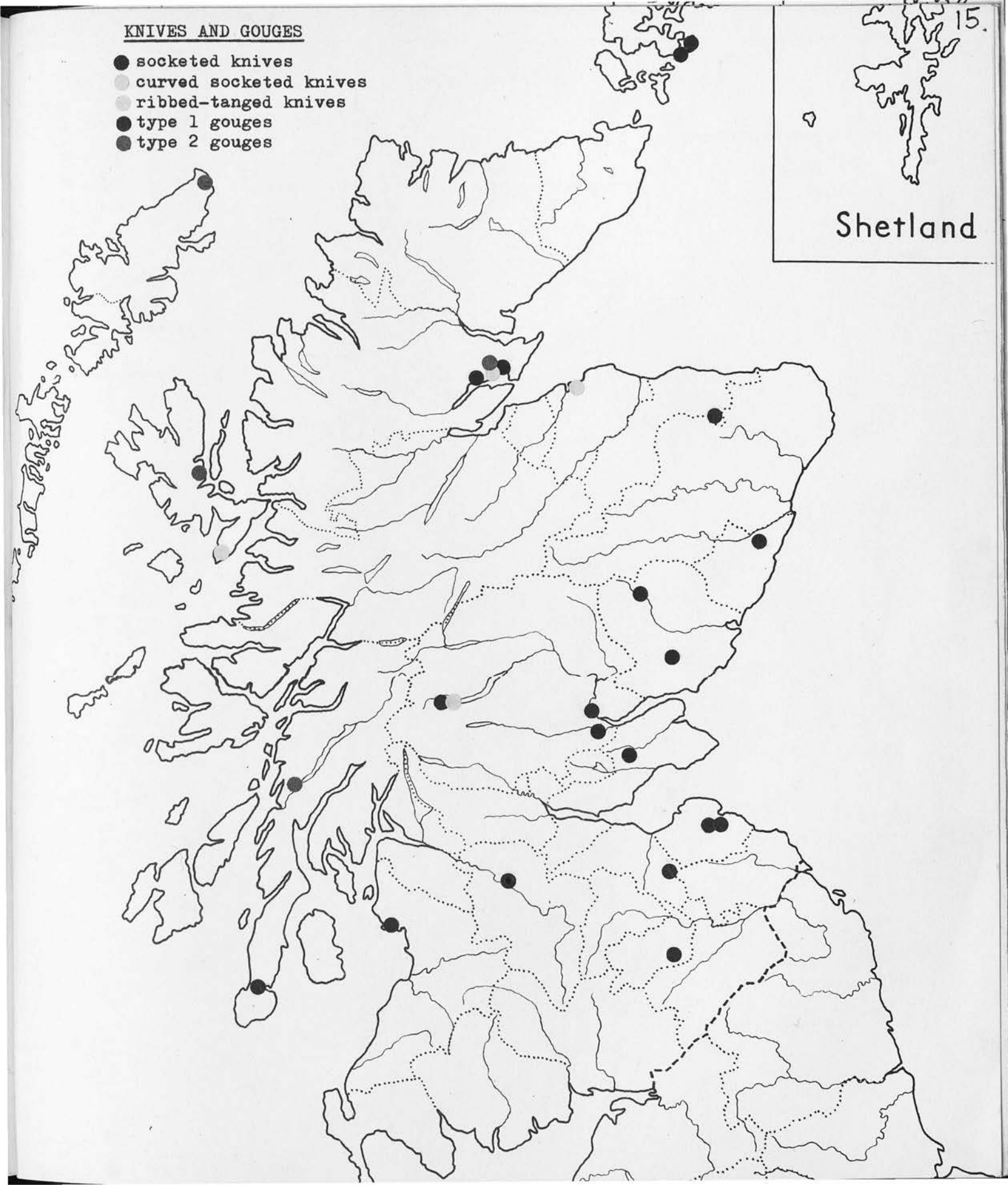


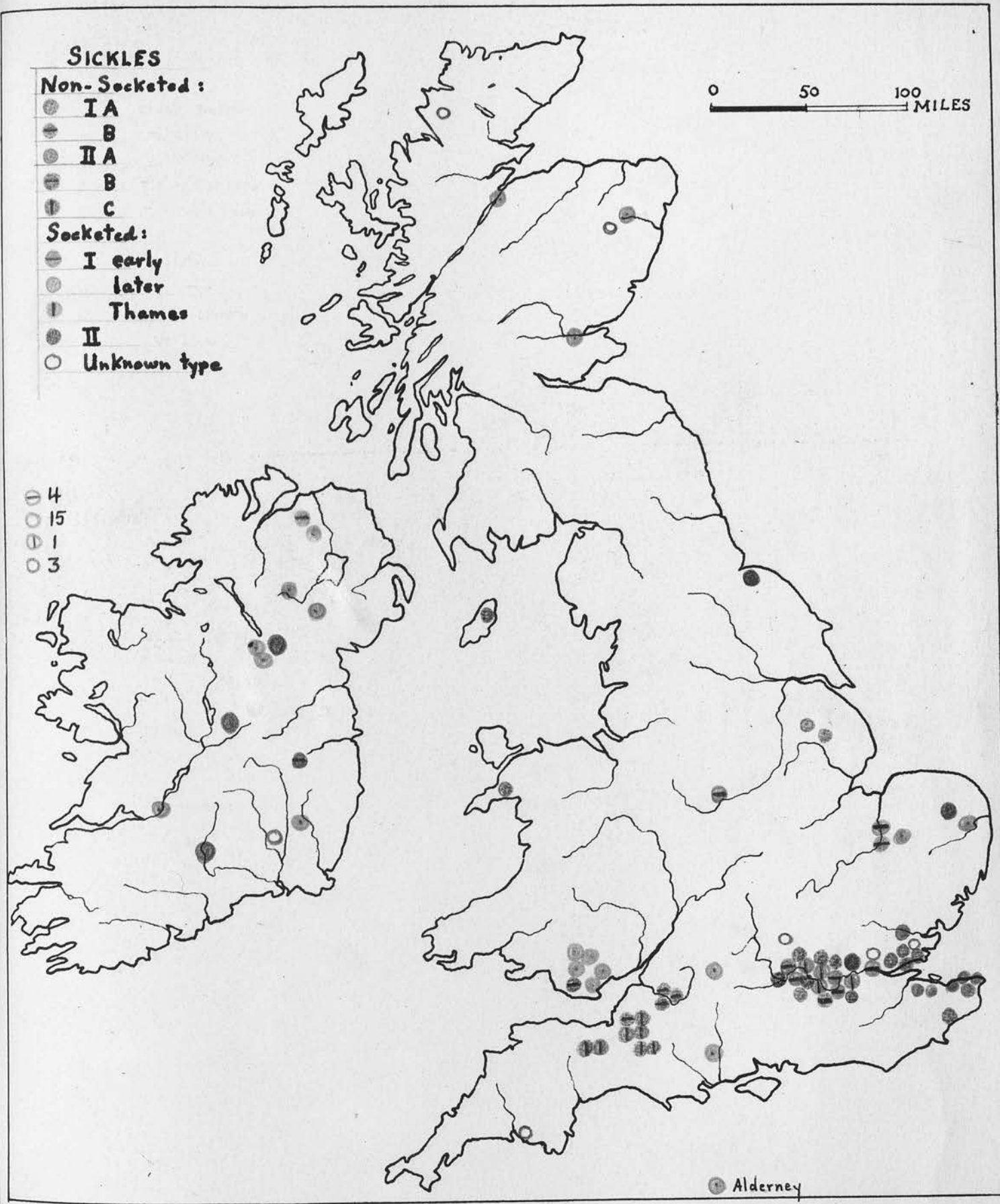

FLANGED AXES
early stop
early sunk
PALSTAVES
bar stop
sunk stop
ledge stop
shelf stop
Shetland

RAPIERS

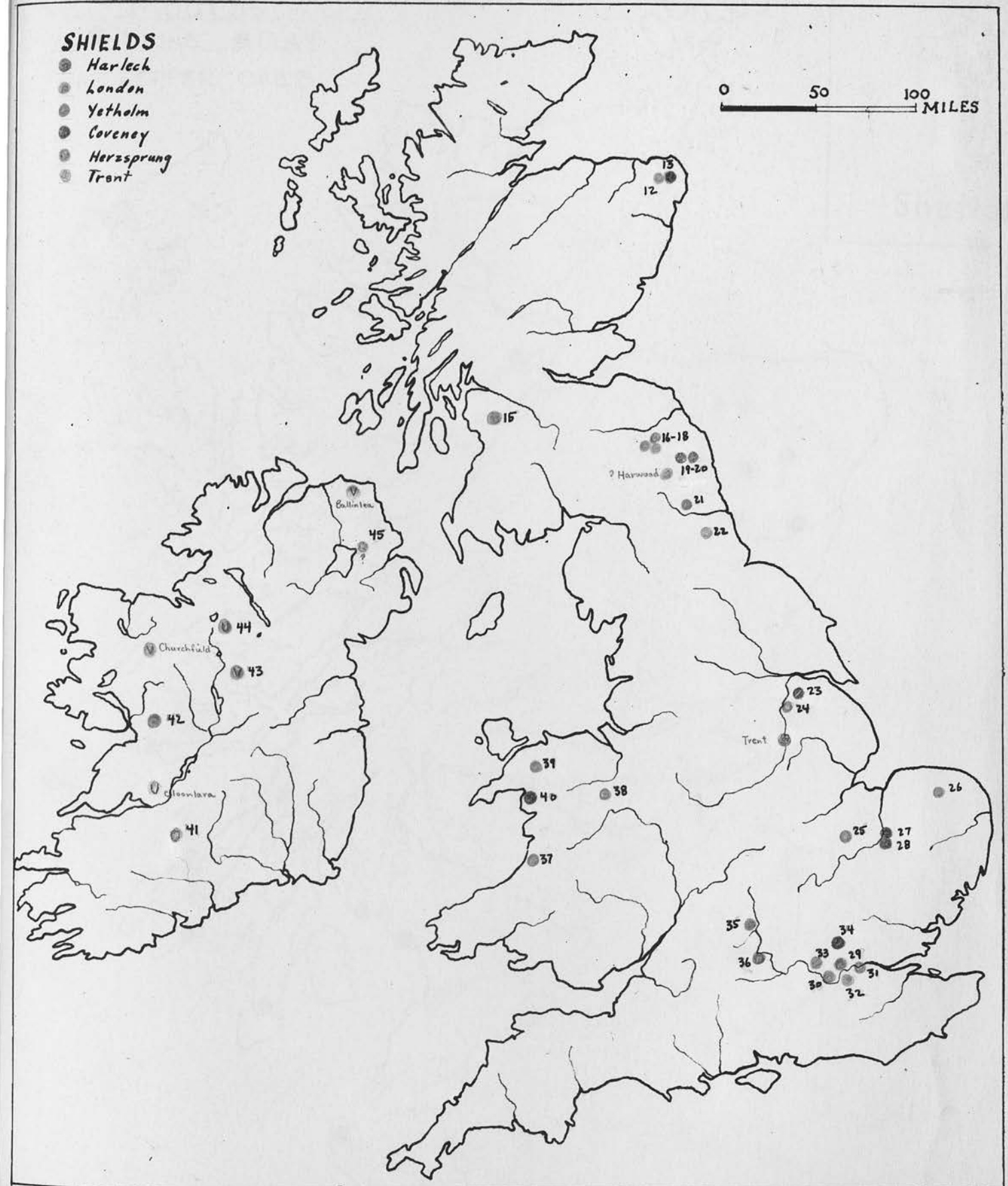


— hoard - approx. loc.

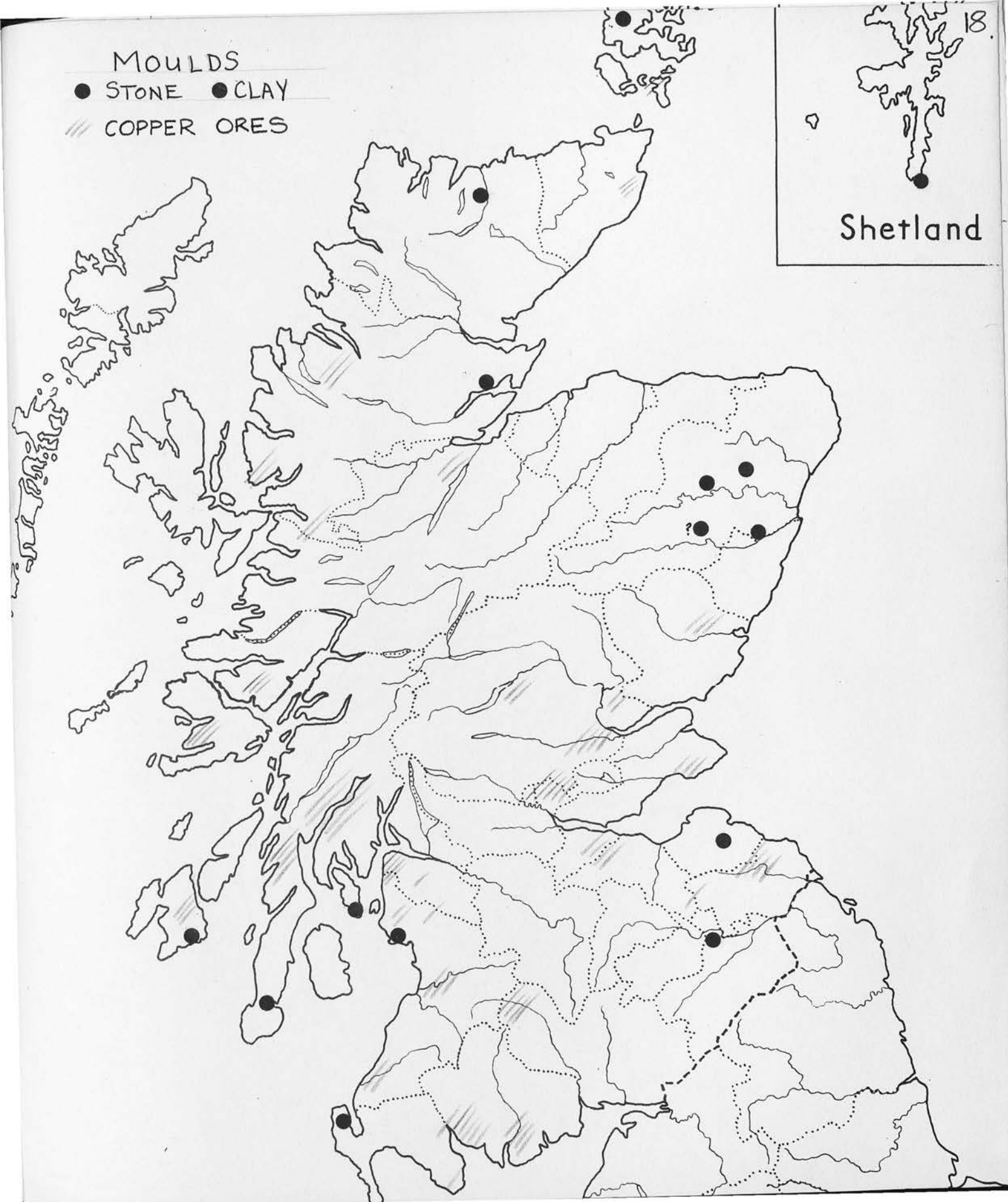

KNIVES AND GOUGES
socketed knives
curved socketed knives
ribbed-tanged knives
type 1 gouges
type 2 gouges
Shetland

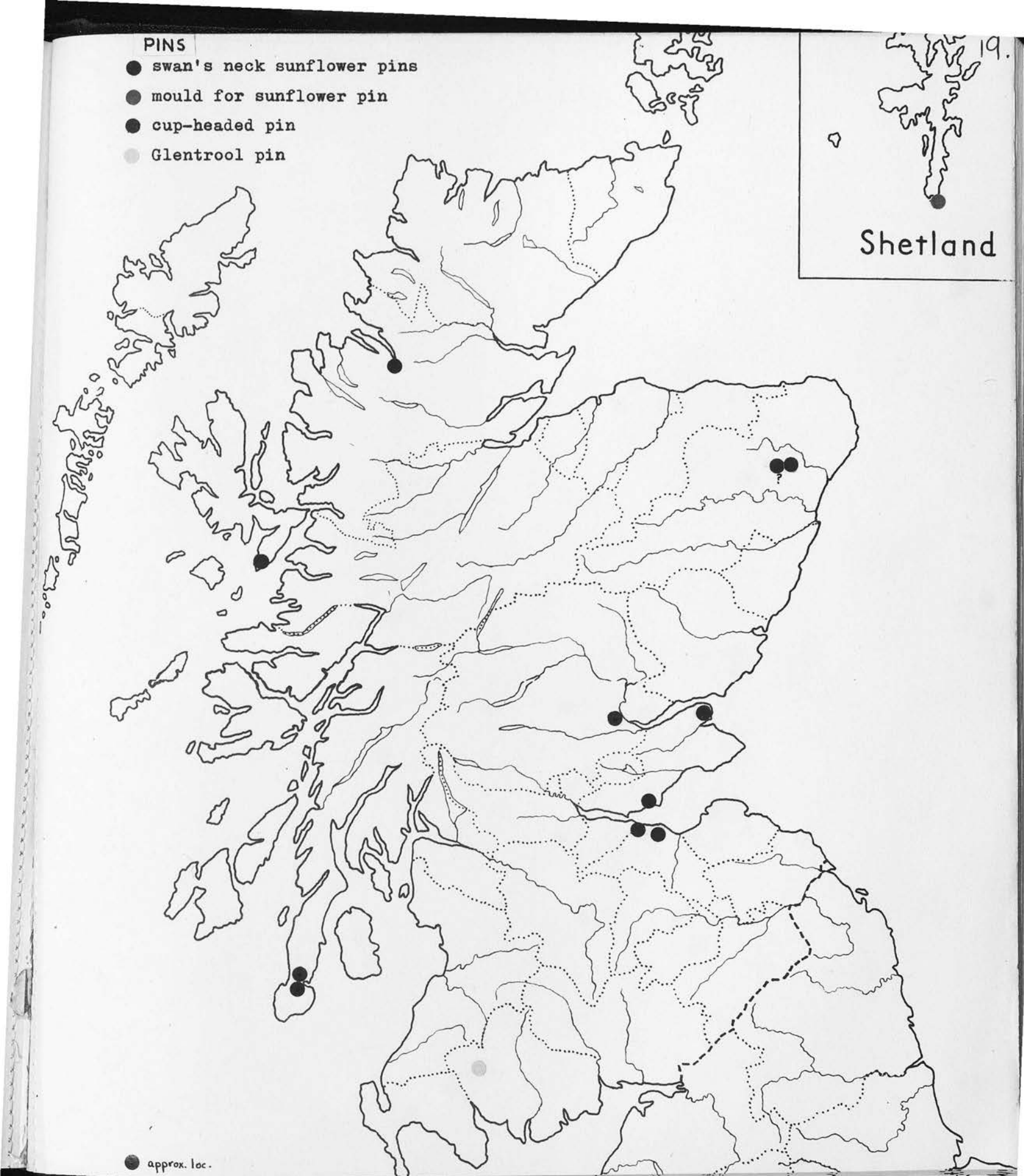


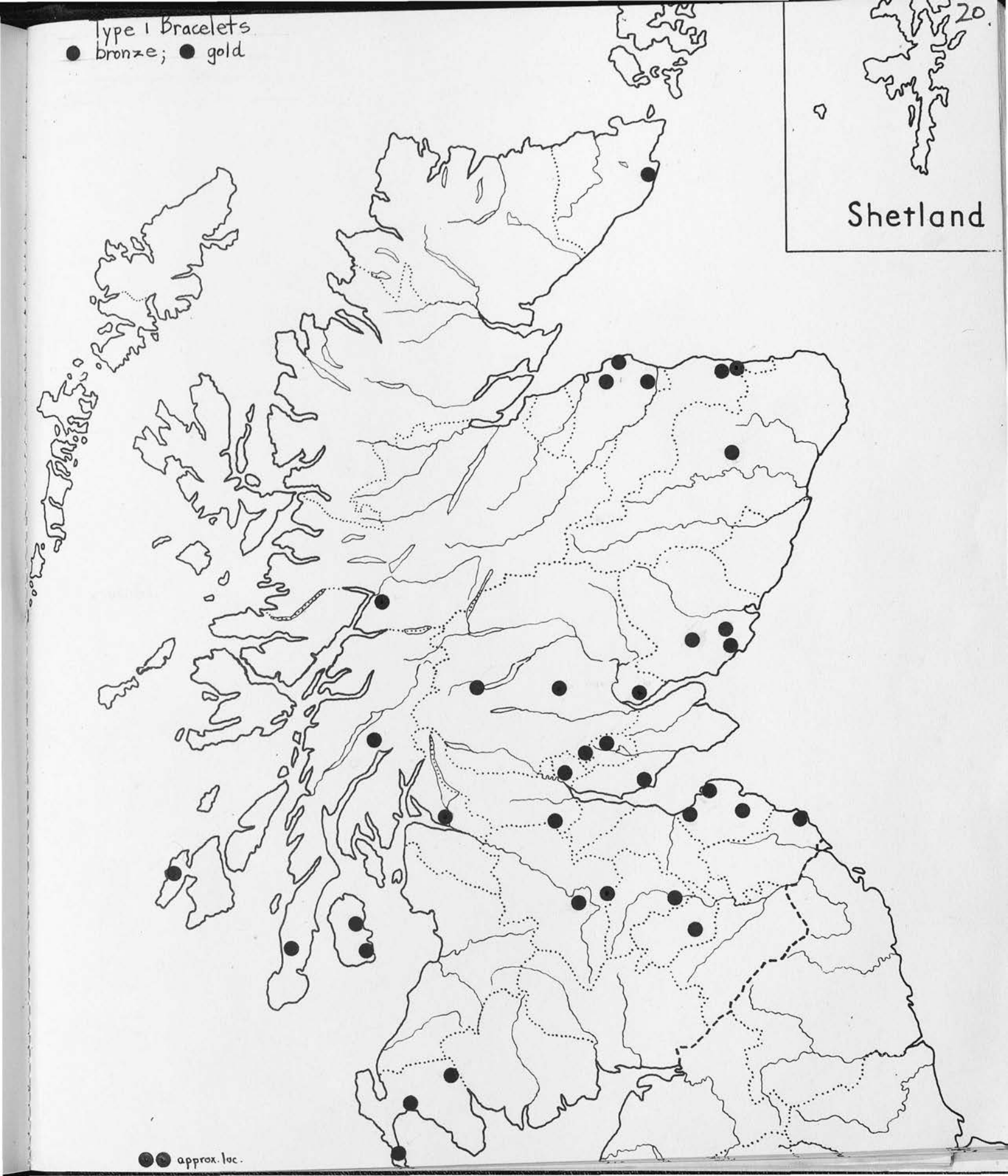
based on Fox 1939 + 1941

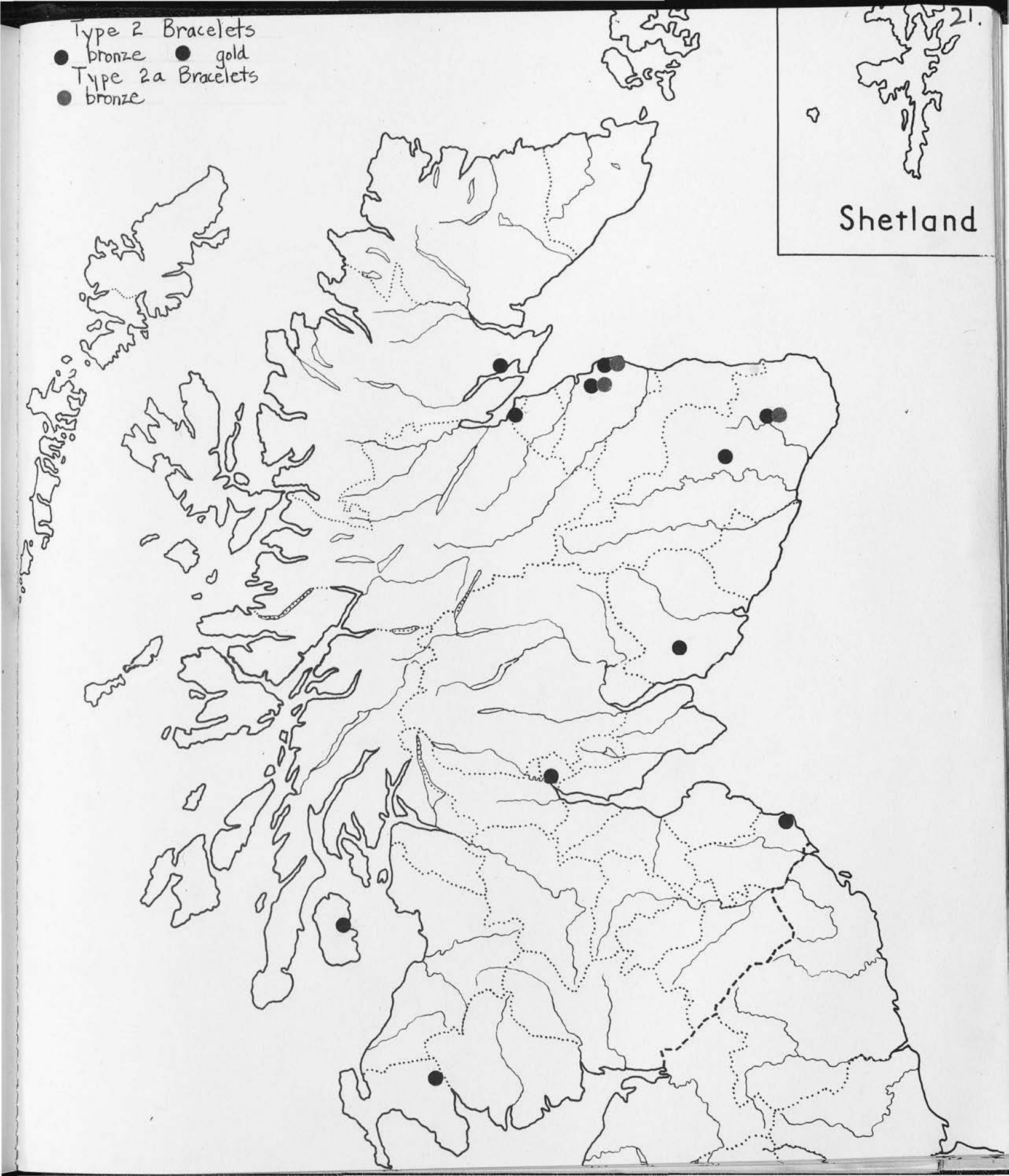


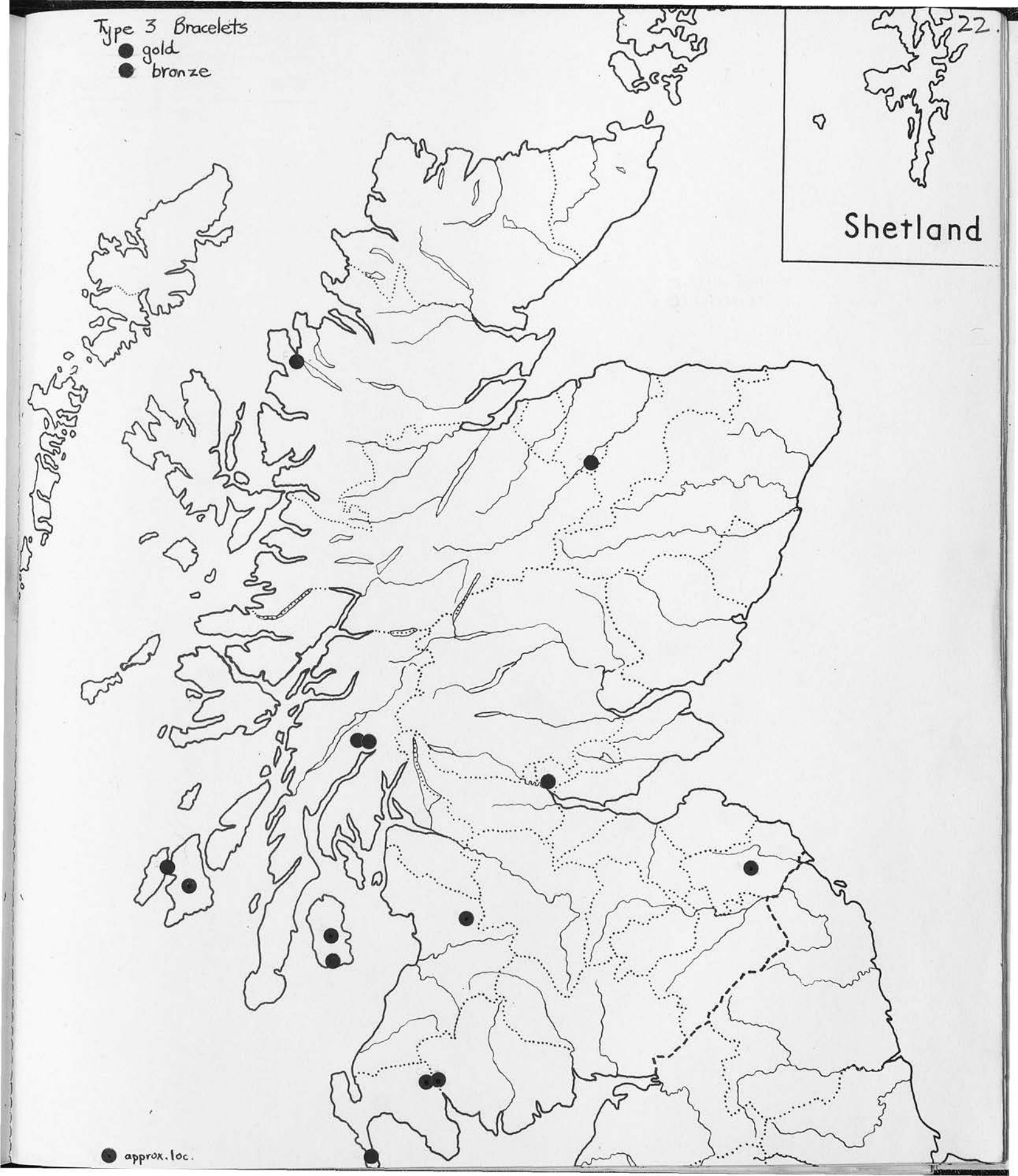
after Sprockhoff 1930 taf. 8 with corrections + additions.

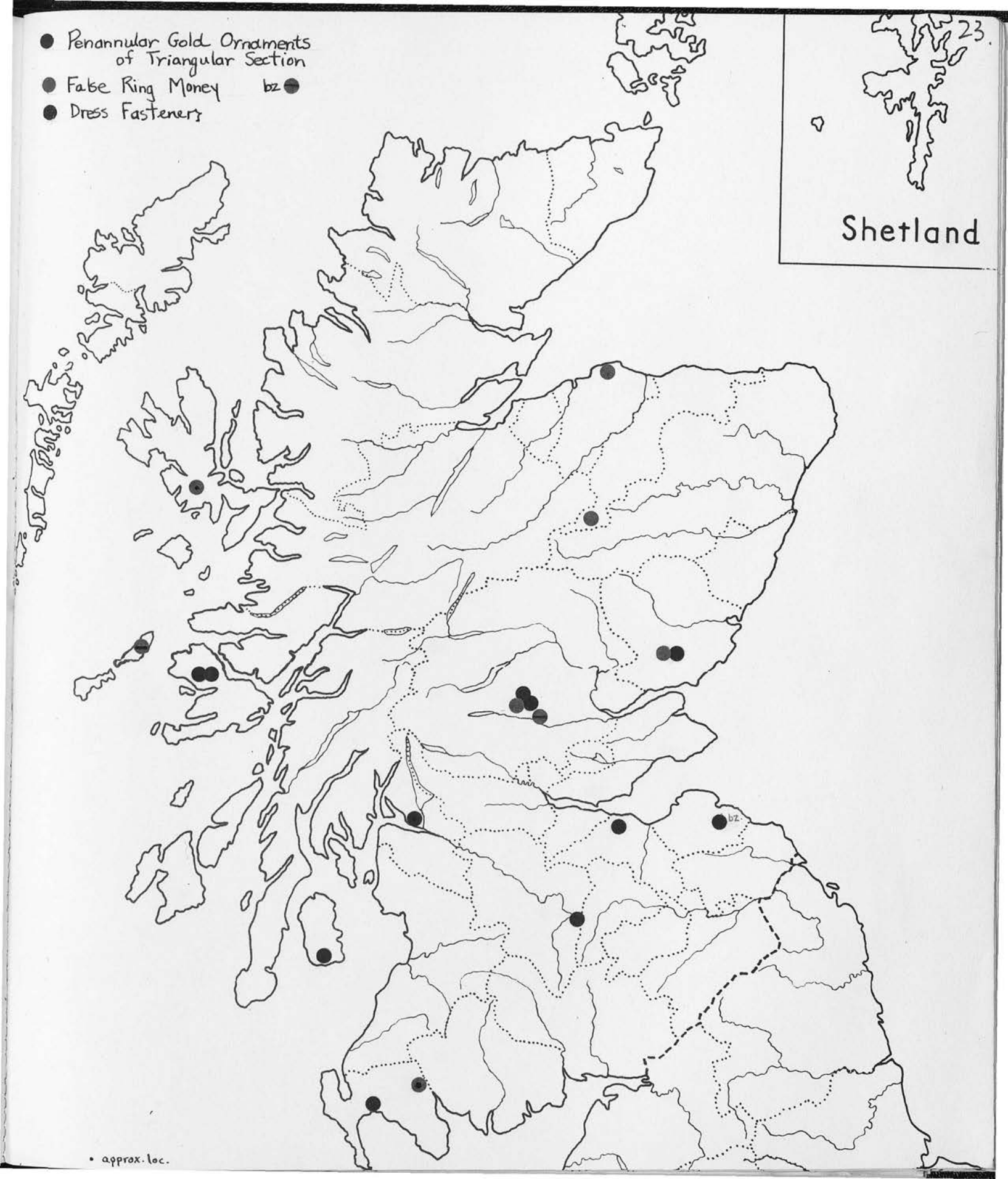

MOULDS
STONE
CLAY
COPPER ORES
Shetland


PINS
swan's neck sunflower pins
mould for sunflower pin
cup-headed pin
Glentrool pin
Shetland
approx. loc.

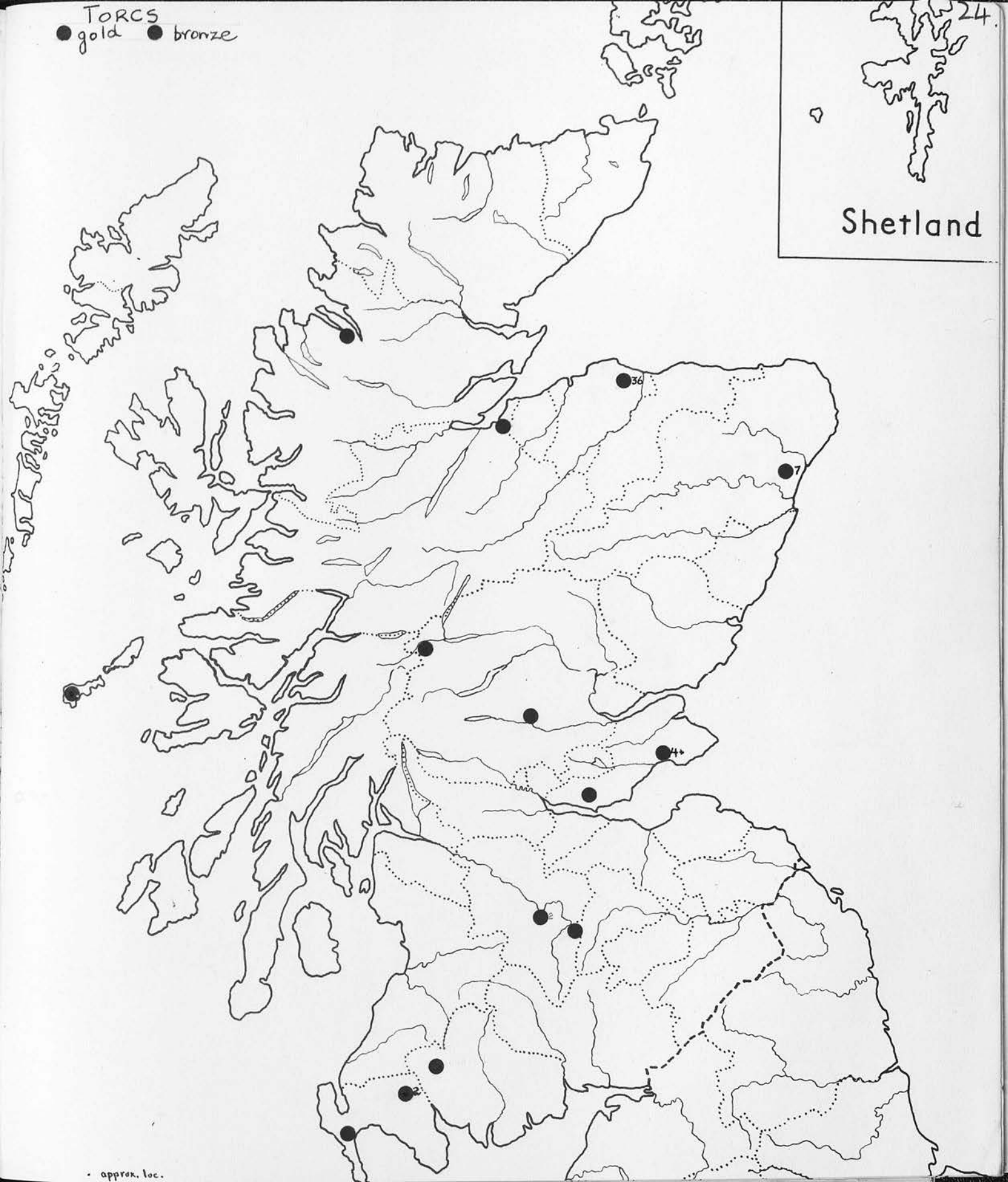

Type I Bracelets
● bronze; ● gold
Shetland
●● approx. loc.


Type 2 Bracelets
bronze
gold
Type 2a Bracelets
bronze
Shetland


Type 3 Bracelets
gold
bronze
Shetland
approx. loc.


Penannular Gold Ornaments of Triangular Section
False Ring Money
bz
Dress Fasteners
Shetland
bz
• approx. loc.

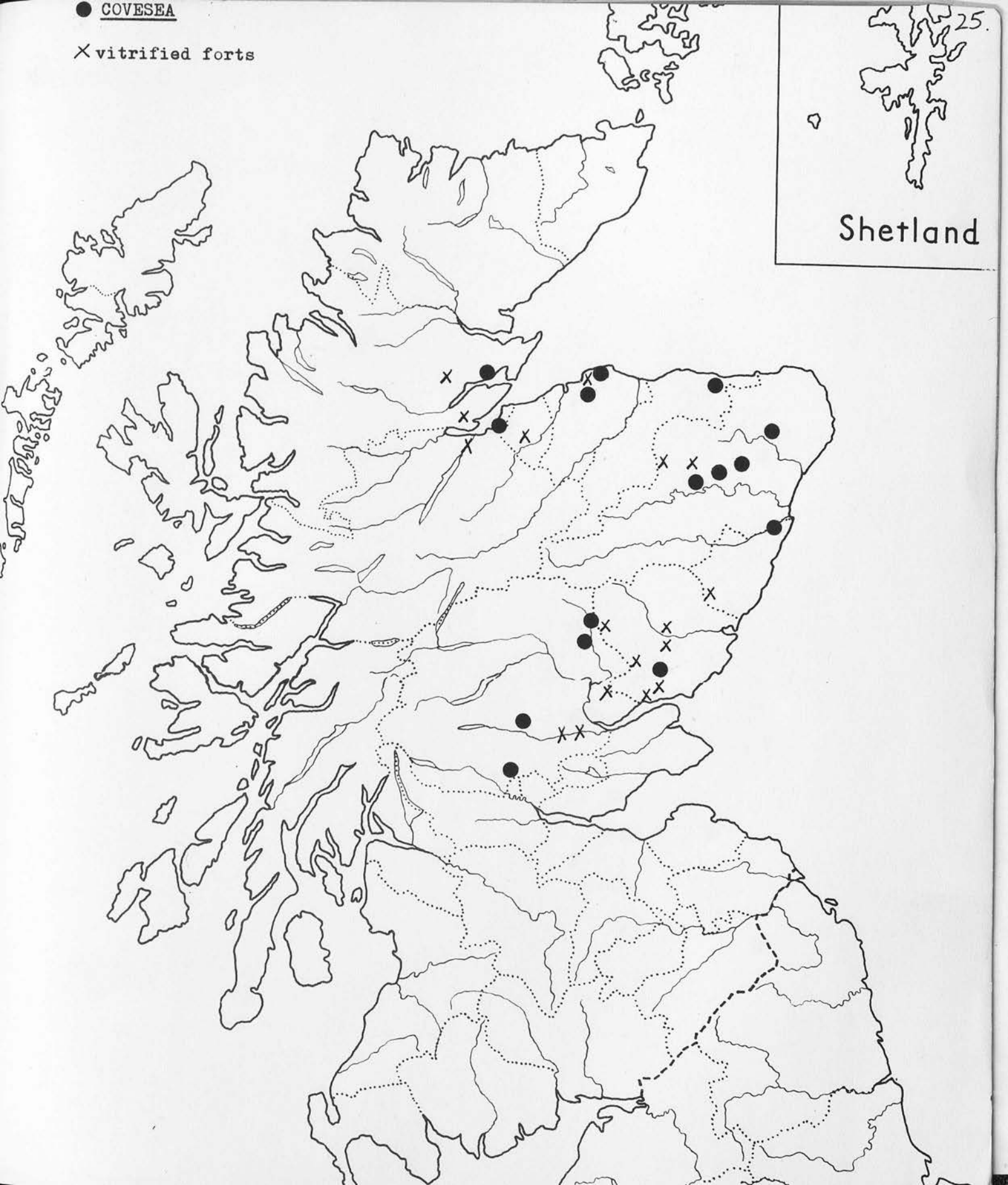
TORCS
● gold ● bronze



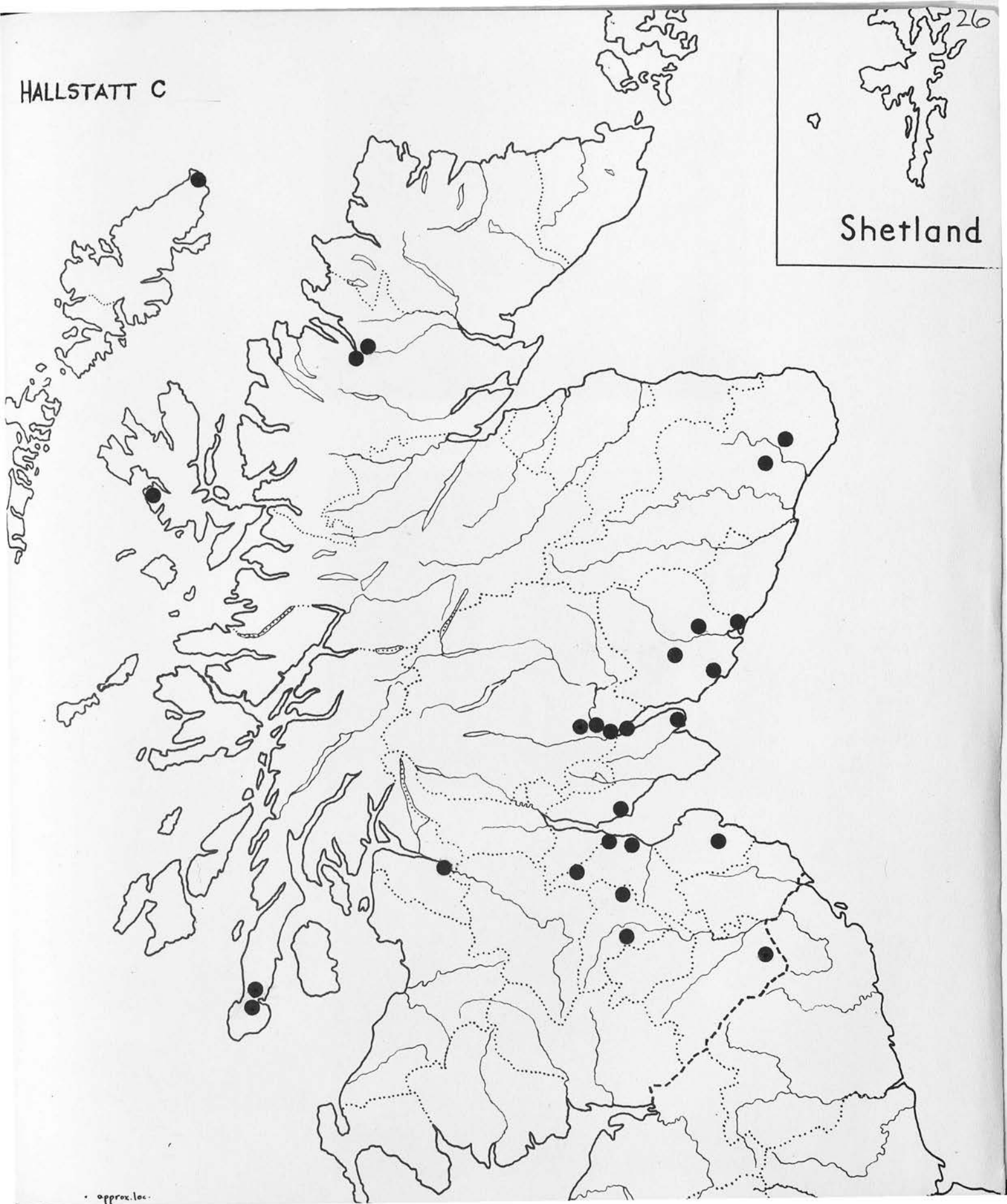
· approx. loc.

● COVESEA

× vitrified forts



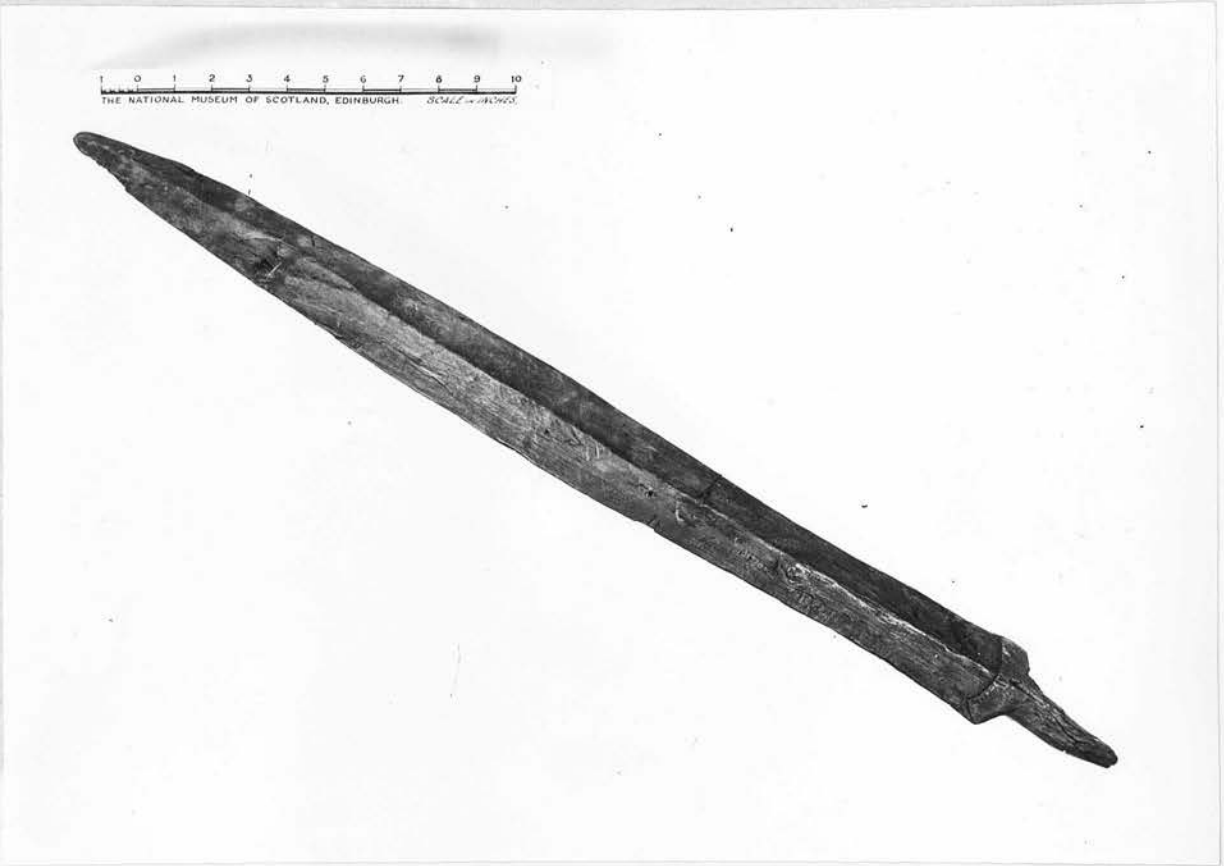
HALLSTATT C



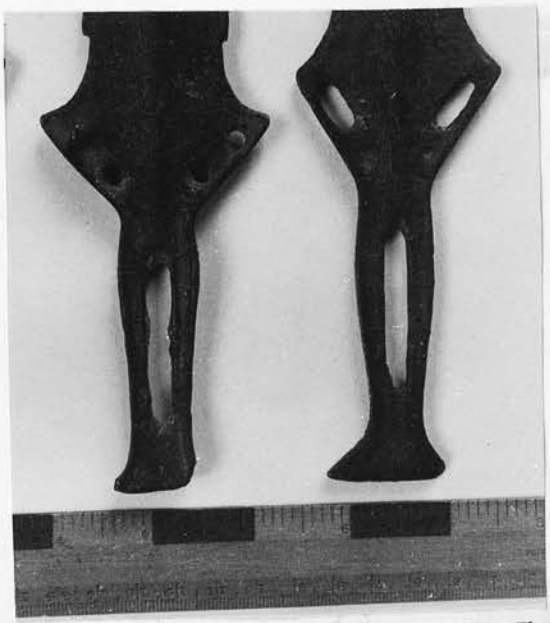
1.

2.

3.


1 0 1 2 3 4 5 6 7 8 9 10
THE NATIONAL MUSEUM OF SCOTLAND, EDINBURGH.

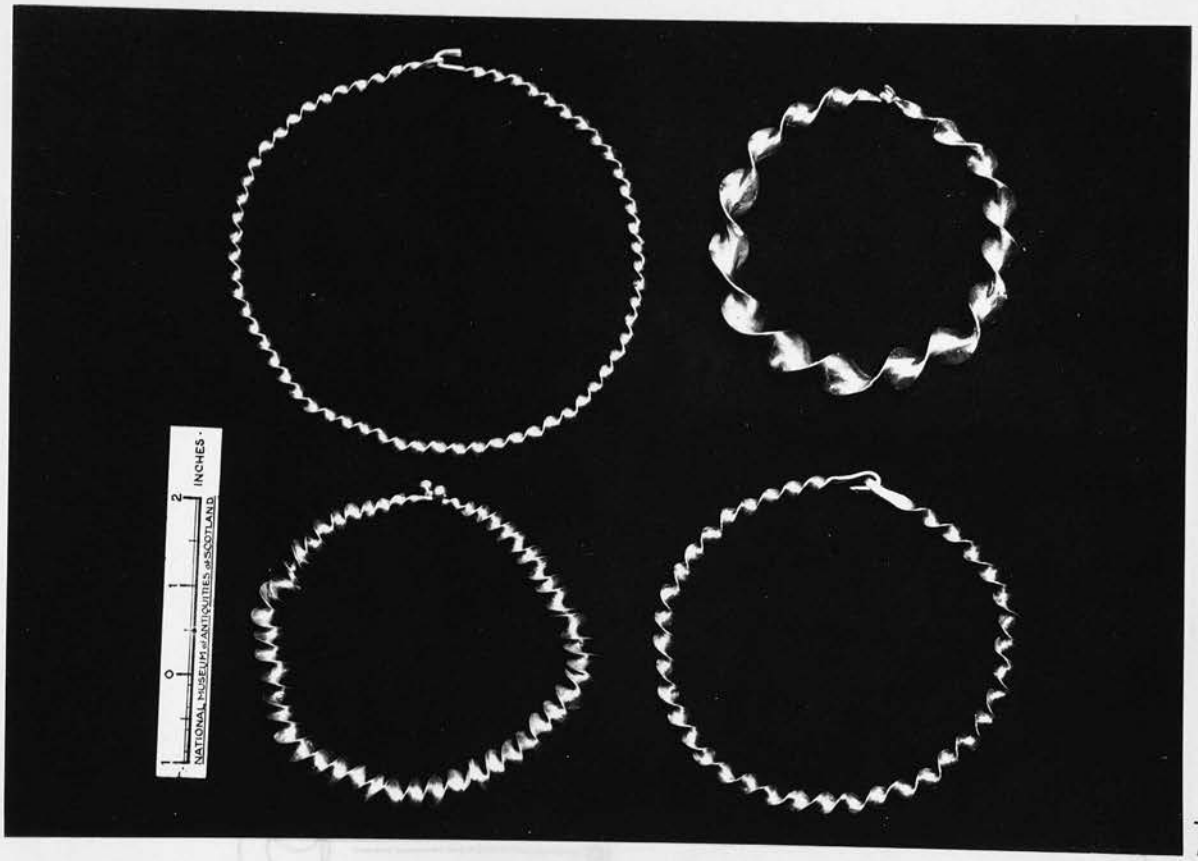
6.



5.


DE 80
DE 12

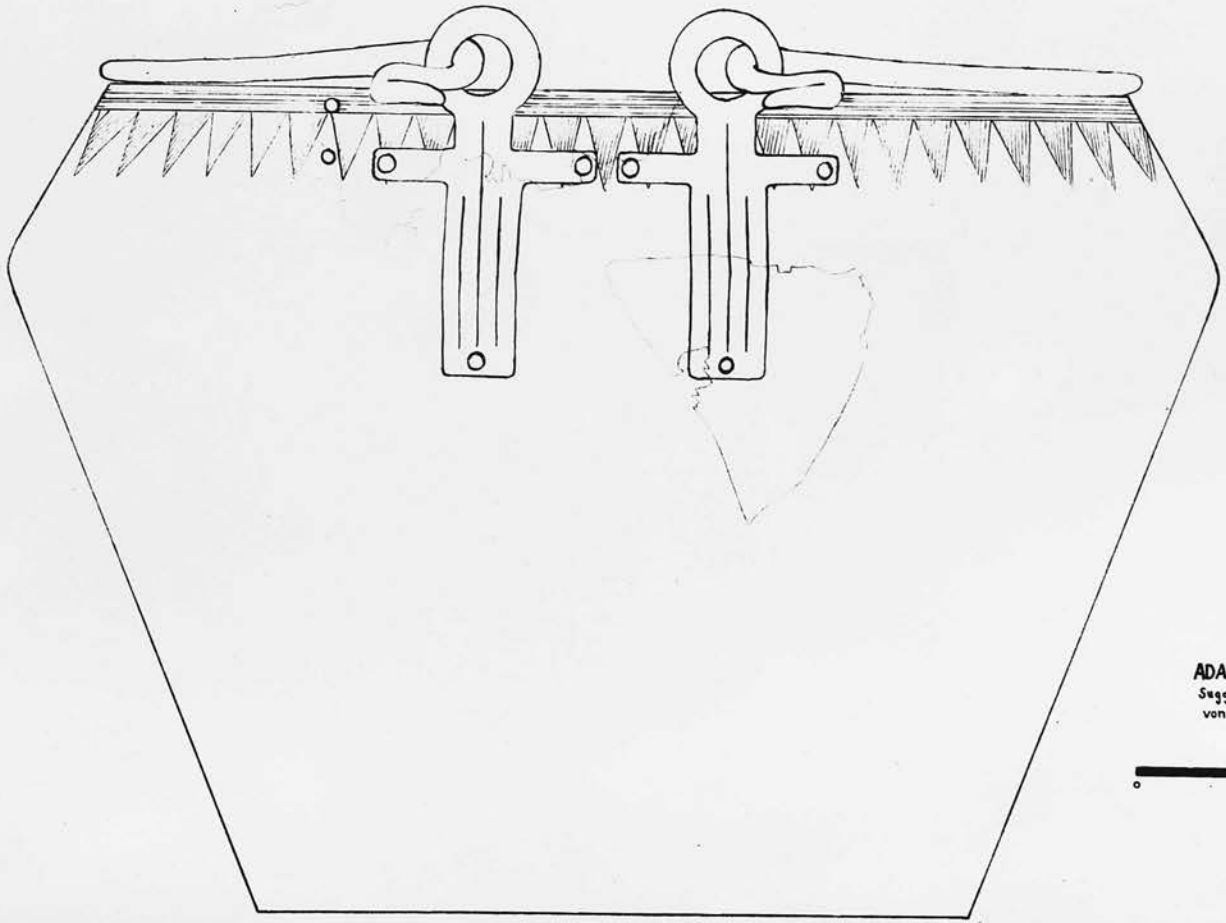
4.


1
0
1
2
INCHES
NATIONAL MUSEUM of ANTIQUITIES of SCOTLAND

7.

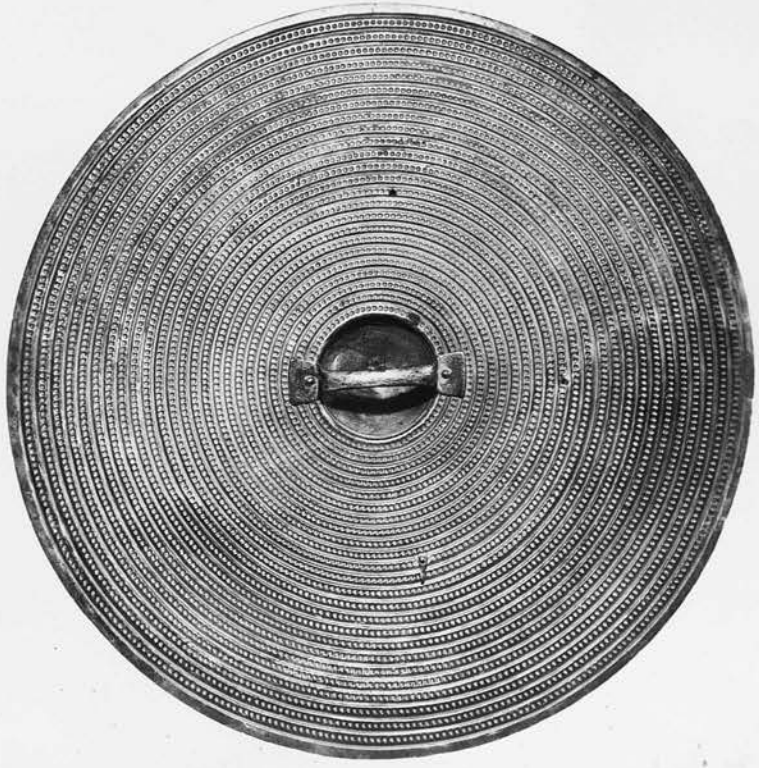

1
0
1
2
3
Inches.

8



ADABROCK, LEWIS
Suggested Reconstruction
von Merhart's Group B2b
SCALE c. 1/2
0 1 2 3"
JMC. 1988

11.



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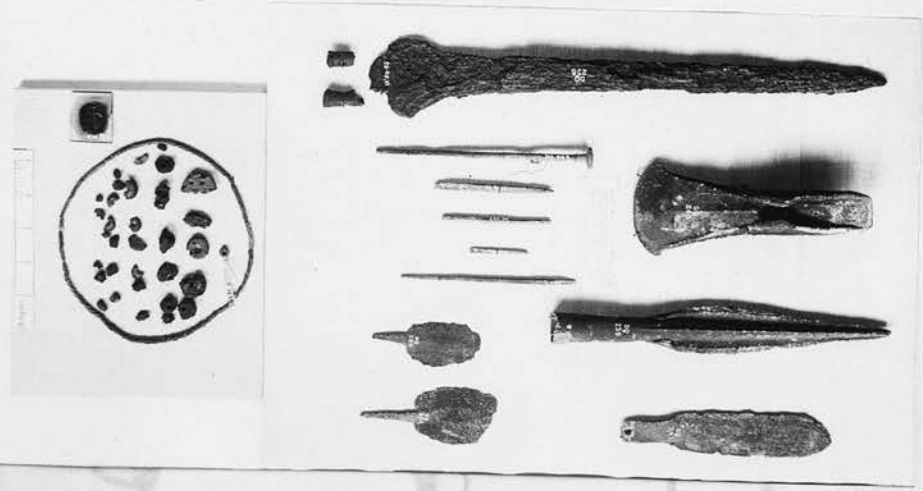

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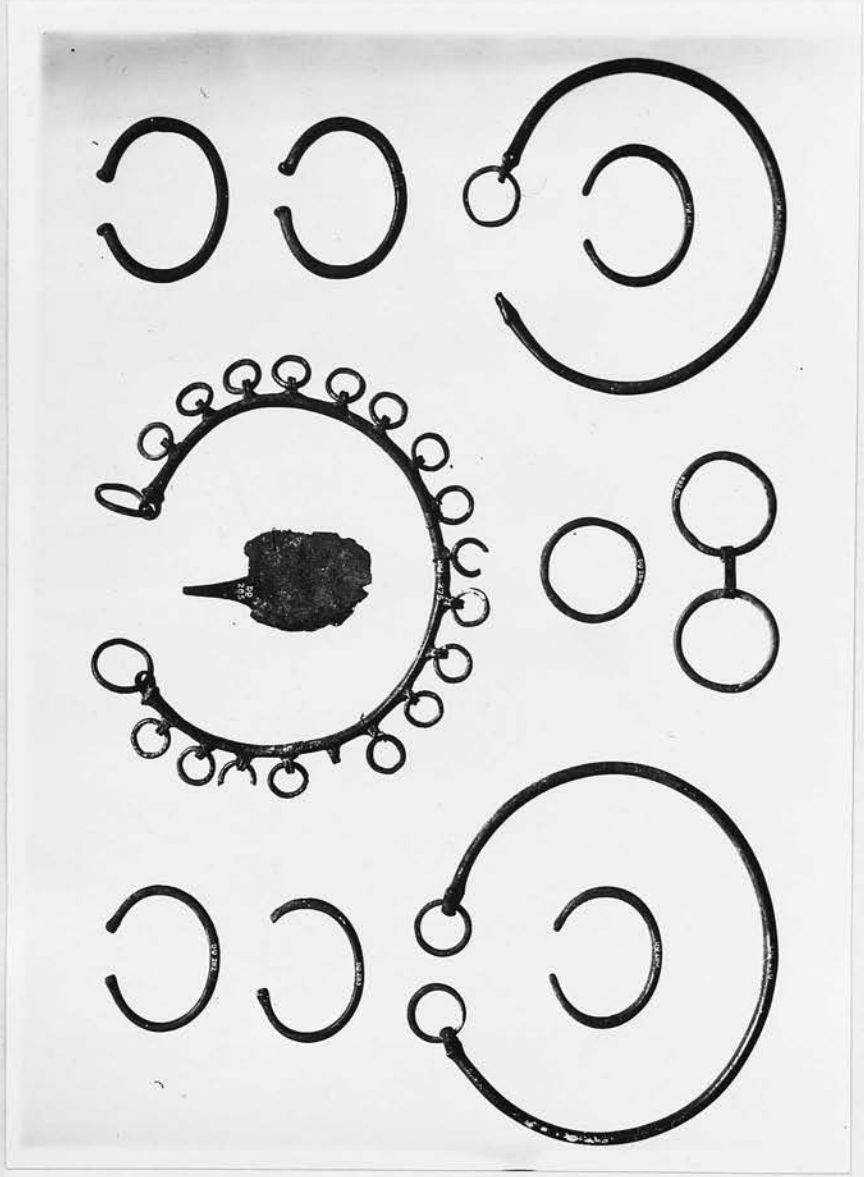

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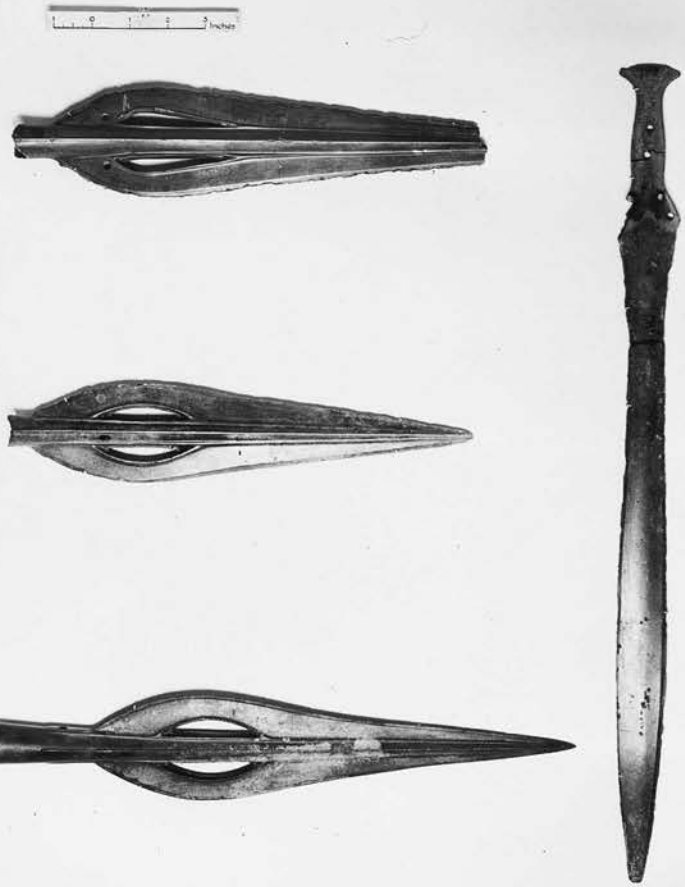

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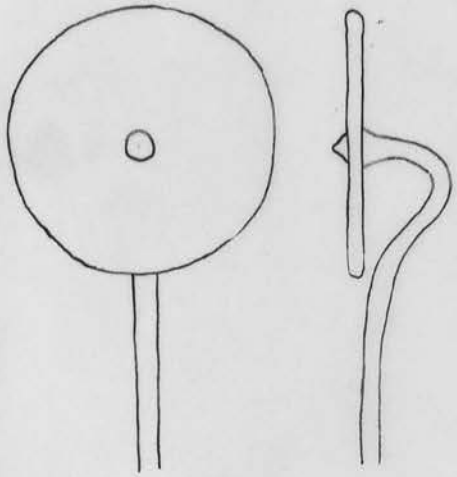
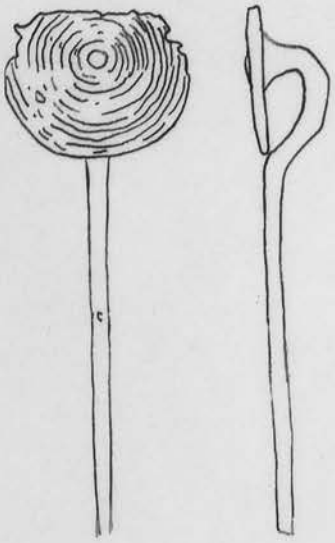


TARVES



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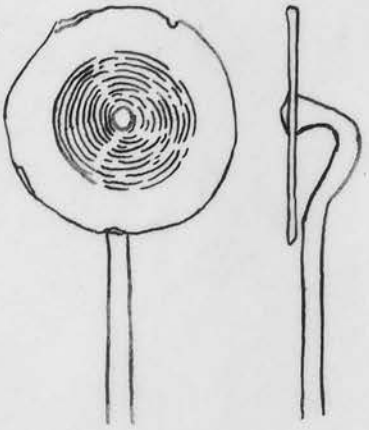
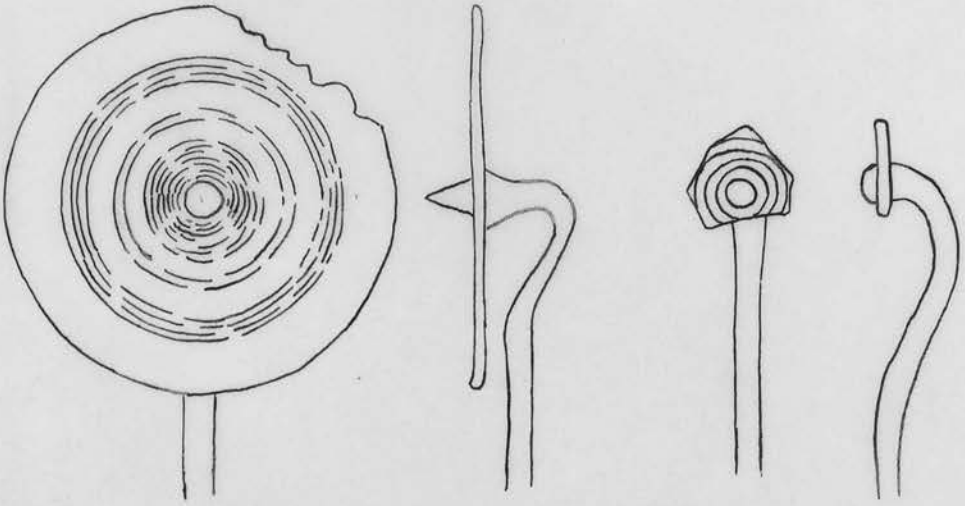
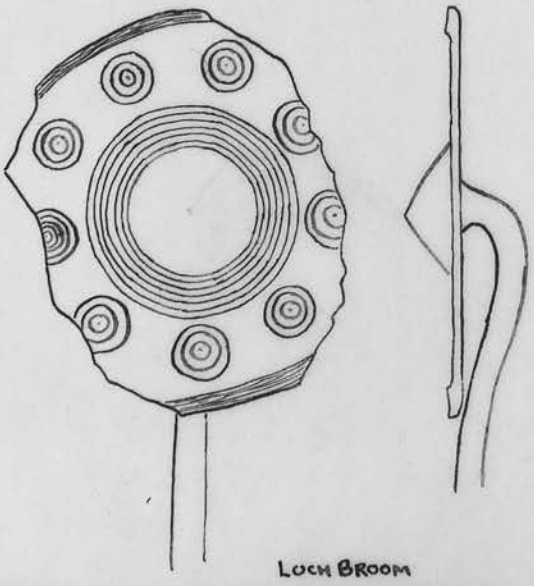


? PERTH

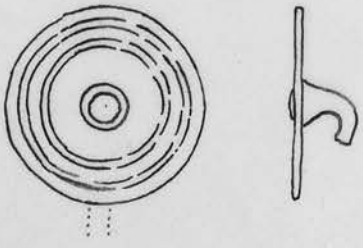


? CAMPBELTOWN

ORROCK



LOCH BROOM



GROSVENOR CRES.